

THE IRON AGE

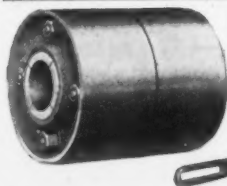
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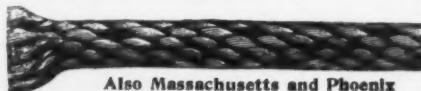
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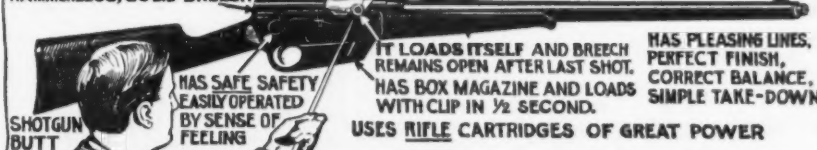
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See page 57

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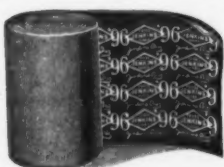
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SEE PAGE 22



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THE IRON AGE

New York, Thursday, July 18, 1907.

A Notable Tod Gas Engine.

Installed at the Youngstown, O., Works of the Carnegie Steel Company.

A gas engine to be operated with furnace gas and drive a direct connected 1000-kw. alternating current generator has recently been completed by the William Tod Company, Youngstown, Ohio, for the Ohio Works of the Carnegie Steel Company in the same city. It is of the four-cylinder twin-tandem four-cycle double acting type, with cylinders 30 in. in diameter and 42-in. stroke. At a speed of 107 rev. per min. the engine will develop 1650 hp. on furnace gas having a calorific value of 80 B.t.u. per cubic foot.

The general appearance of the engine as it stood on

transmission of the strains through the cylinder walls, and contributes to accessibility and the easy removing of parts. The pistons are of steel, with cast iron junk rings, and the pistons and rods are water jacketed in the usual manner. Adjustable tail rod supports take the weight of the pistons and rods from the cylinders.

The valve gear is driven by eccentrics, eliminating entirely the cam drive, which has been an objectionable feature on many of the gas engines heretofore built. There is one eccentric for each end of each cylinder, which drives both the inlet and exhaust valves—an arrangement that reduces the number of parts. The eccentrics are mounted on two lay shafts running parallel to the axes of the cylinders. The latter are driven by a cross shaft, which, in turn, derives its motion from two eccentrics mounted on the main shaft. The inlet valves are on top of the cylinders, and the exhaust valves on the

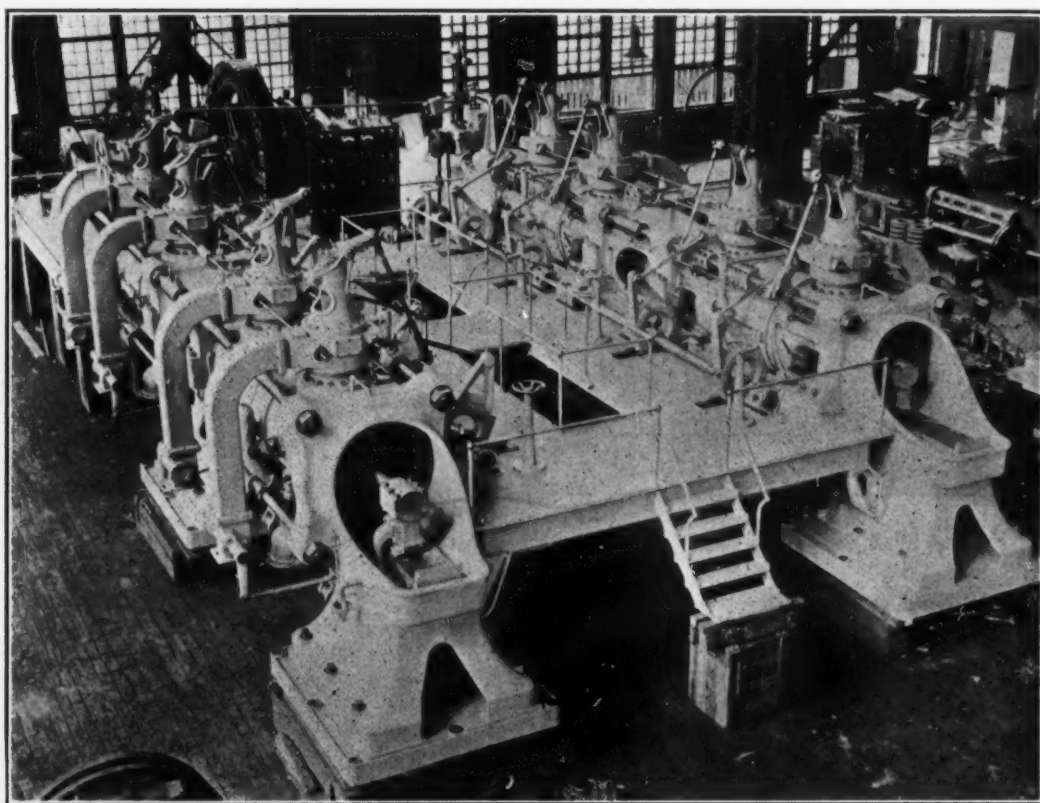


Fig. 1.—The Twin Tandem 1650-hp. Gas Engine to Be Installed for the Carnegie Steel Company by the William Tod Company.

the erecting floor is shown in Figs. 1 and 2. The cylinders are arranged in pairs, two cylinders being connected in tandem to each crank pin. The valve gear, igniter, switchboard and operator's hand wheels are all situated between the cylinders and are easily accessible from an operating platform placed just below the level of the center lines of the cylinders and shaft. The foundation level under the cylinders being several feet lower than under the frames, leaves ample room below the cylinders to make the exhaust valves, &c., easily accessible, a very desirable but somewhat unusual feature.

The cylinders and water jackets are integral and cast in halves, secured together with flanged joints at the center. The cylinders are not attached directly to the main bedplates nor to each other, but are supported by the tie pieces and end supports in such a way that the barrels themselves are entirely free. All strains are transmitted through four heavy forged steel tie bolts extending the entire length of the cylinders, and attaching directly to heavy lugs on the bedplate. This obviates the

bottom. The inlet valve proper is of the mushroom type, sealing the ports from the pressure in the cylinders. The main valve is operated by a rolling lever and returned to its seat by a spring. The mixing valves and governor valves are of radial gridiron type, and are located in the upper section of the valve bonnet. The mixing valves may be operated individually or collectively by a suitable hand mechanism. The governor valve which controls the admission of gas has constant travel, the time of opening being controlled by the governor by either increasing or decreasing the angle of advance of the crank which operates them, since the engine is of the constant compression type.

The governor is of the fly ball pattern and is in duplicate, one controlling the operating valves on each side of the engine. The two are driven by Morse chains through a flexible coupling, and are connected by a cross rod which may be removed in case it is desired to operate either side of the engine alone.

Each end of each cylinder is equipped with two lg-

nitors, one operated mechanically and the other by a solenoid. Either may be used independently or the two together. The igniters are under control of the governor, and when the engine is at rest are automatically thrown back to the dead center. The ignition is on the make-and-break system, using direct current at 90 volts, supplied by a motor-generator set, which is so designed that either end may be used as a motor or a generator, or both may be used as generators by driving directly from the engine shaft. Connected in series with each igniter is a telltale lamp on the switchboard, giving a positive indication as to whether or not the igniters are sparking, short circuited or burnt out.

The whole machine is of very heavy construction, the total weight with the flywheel being 900,000 lb. The journals are 21 in. in diameter and 40 in. long; the crank pins are 13 in. in diameter and 11 in. long, and the engine occupies a space of about 27 x 60 ft. The engine and generator will be used for supplying electric current for power purposes and will be a part of the large gas engine electric and blowing installation which will

live. The advantages of the city as a place for conventions are also pointed out. The printed matter is made interesting by being in narrative form, representing the author in conversation with a visitor whom he is conducting to the points of interest.

Electrical Equipment in a Northwestern Paper Mill.

The Willamette Pulp & Paper Company, Oregon City, Ore., has just added a second factory to its plant, increasing the capacity to 140 tons of news paper per day. The plant is now one of the largest of the kind on the Pacific Coast. The new mill is for the most part electrically driven. The Willamette River at this place has a fall of about 25 ft., and the old mill of the company is located at the brink of the falls. The new mill is about 1000 ft. distant, and is driven by induction motors supplied with current from a water wheel driven generator located in the old mill. It has been possible to develop some 750 hp.

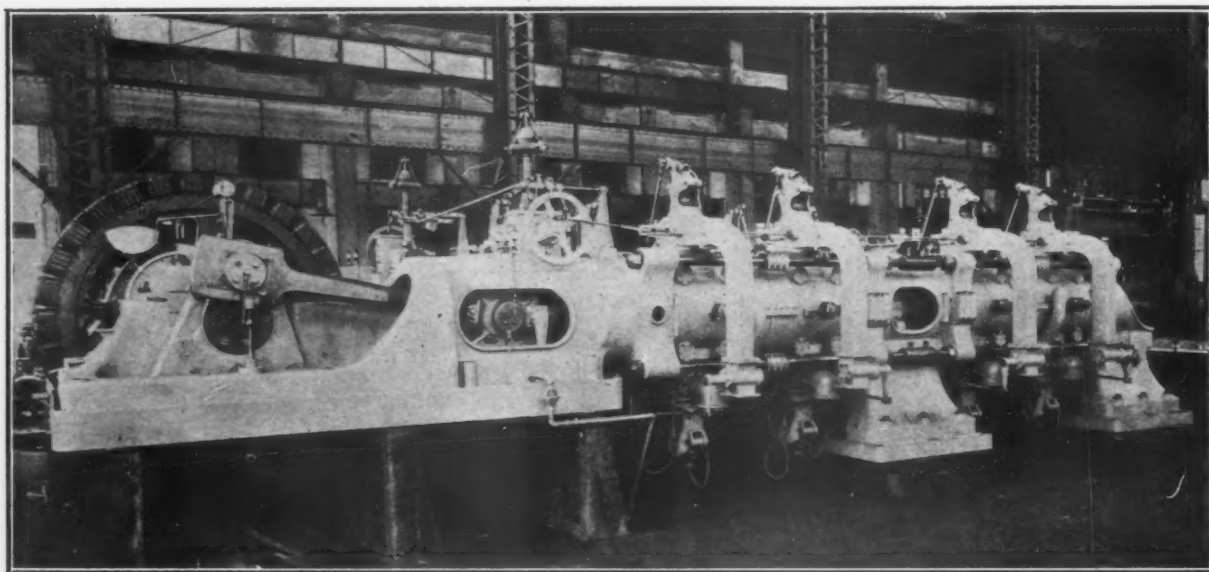


Fig. 2.—A Side View of the Engine as It Appeared on the Erecting Floor in the Builder's Shop.

utilize waste gases from the new furnaces under construction at this plant.

The Commercial Side of Niagara Falls.

Much effort to advertise the natural advantages of Niagara Falls as a manufacturing center would seem superfluous. The falls have a world wide reputation for their scenic grandeur and the tourists they attract cannot but be impressed with the number of large industries that exist there to-day. Add to this the extended discussion of their possibilities as a source of power which has appeared in the newspapers and technical and popular periodicals, and the need of a systematic campaign of publicity would not appear to be great. However, the Board of Trade of that city is provident and has published a little folder, entitled "Niagara Falls of To-day," the main purpose of which is to emphasize the desirability of locating factories there. In proportions it conforms to the standard time table folder, but it opens out into a book 8 x 9 in., of 16 pages, affording ample space for pictorial and descriptive presentation of its subject. The illustrations include views of and about the falls, and notable factories, hotels, office buildings, and particularly the several enormous power stations, which at present represent a combined capacity of 700,000 hp. This is stated to be nearly twice the amount necessary to operate every piece of machinery in New York State. Besides the cheap power offered, the other attractions emphasized are ample shipping facilities by water or rail, plentiful supply of labor, central location, reasonable cost of land and healthful and congenial surroundings as a place to

additional at the falls and at the same time locate the mill advantageously.

The electrical equipment, which was furnished by the General Electric Company, consists of a 600-kw. three-phase 600-volt revolving field alternating current generator, direct connected to a 1000-hp. water wheel built by the Platt Iron Works. The power is transmitted directly at the generator voltage. Both group and individual induction motor drives are used. The motors are all of the squirrel cage type and operate at 550 volts, and include two of 200 hp., two of 100 hp., one of 10 hp. and one of 50 hp.

Why Money is Scarce.—Many theories are advanced as to the principal causes of the scarcity of funds that has existed for a long time, says the *Wall Street Summary*. A banker in this city who has made a close study of the question, and who has been extremely conservative for many months, principally because of the monetary situation, says that he believes that a large amount of money is in the hands of laborers, artisans and others whose wages have been very materially increased within recent years. He believes that people of this class are carrying about a much larger amount of money than ever before. Others, who hold this same theory, point to the fact that the newly arrived foreign element is receiving much higher wages than was ever paid to that class of people until a few years ago, and that many of them hardly know what a savings bank is, and consequently are simply hoarding their savings. It is believed that this situation is a very important factor in the money market.

A New Norton Cylindrical Grinder.

The 6 x 32 in. cylindrical grinder, front and rear views of which are shown in Figs. 1 and 2, is a new and smaller size of the line of grinding machines built by the Norton Grinding Company, Worcester, Mass. It is made to swing diameters up to 6 in., so that it may handle work having projections, and occasional large, short pieces, but principally to give room for suitable steady

machines, the purpose being to simplify the construction so as to decrease the cost of building. All the really necessary feed and speed changes are retained, however, and the machine has the same capacity for cutting, taking as heavy cuts with just as wide a wheel as the larger types. For small work it can be operated quicker and to better advantage generally.

The characteristics of having the work revolve on dead centers, the wheel base fixed and the work table the moving part, are found in this as in the larger grinding

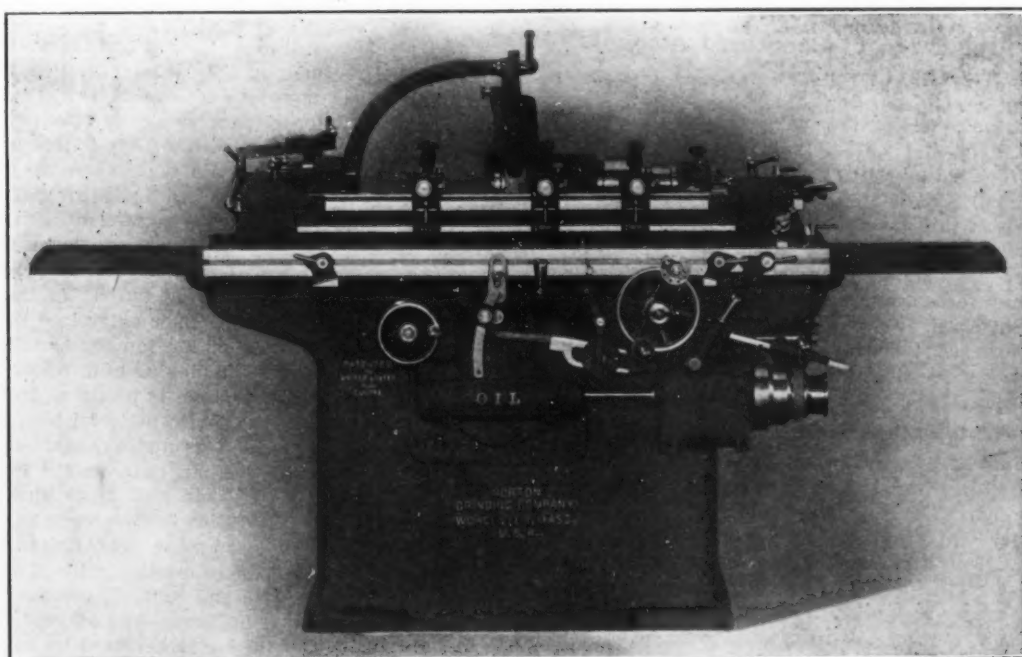


Fig. 1.—The 6 x 32 In. Cylindrical Grinder Built by the Norton Grinding Company, Worcester, Mass.

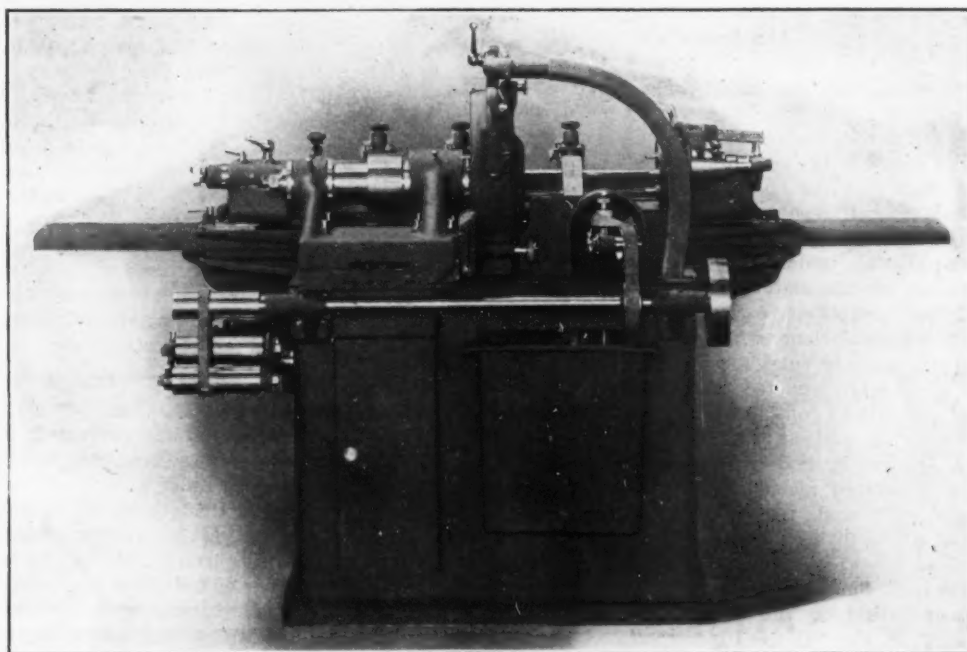


Fig. 2.—Rear View of the New Small Size Norton Grinder.

rests to support work from $\frac{1}{2}$ to $2\frac{1}{2}$ in. in diameter up to 32 in. long, for which the machine is best suited. It is designed for the rapid handling of small cylindrical work, where cheap manufacture of accurate pieces is desired.

The machine, which is the next size below the company's 10 x 50 in. grinder, embodies the same principles of mechanism as the larger Norton tools, which have been illustrated and described in *The Iron Age*. The feeds have been somewhat simplified; eight changes are obtained by the use of a four-step cone pulley and back gears in an adjoining gear box. The number of speeds have been likewise reduced, as compared to the larger

machines, all being factors which contribute to convenience and rapidity of production, accuracy of work and the elimination of vibration of the wheel. The table speeds are independent of the work speeds, this arrangement making it possible for the work to traverse a distance equal to the full width of the wheel at each revolution of the work, which is desirable when removing stock rapidly. The cross feed is automatic and has micrometer adjustment, working accurately to within 0.00025 in.

Three universal steady rests are furnished with the machine, supplied with one set of work shoes for one diameter of work. Other sizes can be had if desired.

Provision is made for grinding tapers up to 2 in. per foot. A center grinding attachment is furnished for grinding centers for lathes, &c. The two grinding wheels regularly furnished are 14 in. in diameter by 1-in. face, and the same diameter with 2-in. face, for grinding soft and tool steel; wheels for other material are supplied extra. An improved overhead works is furnished with the machine, with shafts ground on centers, and with large self-oiling bearings. The weight of the machine, with the overhead works, is 3000 lb.

May Production of Denatured Alcohol.

WASHINGTON, D. C., July 13, 1907.—The production of denatured alcohol for industrial purposes during the month of May was 172,573.21 gal., according to the returns just received by the Internal Revenue Bureau. The Fifth Internal Revenue District of Illinois produced three-fourths of this amount, while the sixth and seventh Indiana districts produced the remainder. The figures for May are the smallest recorded since the free alcohol law went into force and are nearly 100,000 gal. less than the output in April. To those familiar with the existing situation, however, the figures are not at all surprising, and the reasons for the reduced consumption are briefly set forth below.

Approaching Liberalization of Regulations.

Important changes will be made in the existing regulations by the revised code, to be promulgated on July 22, which will not only provide for the execution of the novel features incorporated in the law by the supplemental legislation enacted by Congress last winter, but will also relax the vexatious restrictions on both retailers and consumers under the law now in force. Thousands of dealers who have refused to take out permits under the present law are preparing to handle denatured spirits as soon as the revised regulations go into force. This applies especially to large retailers. Many large manufacturing consumers have deferred fitting up for the use of denatured spirits until they can avail themselves of the tank car and tank wagon privileges granted by the new statute, which are not yet in force. It is confidently believed that if Congress had not amended the law at its last session the production and consumption of denatured spirits would have been vastly greater, but it goes without saying that the liberalizing of the law by the supplemental act will result in a much greater output and consumption for the coming fiscal year than would have been possible under the original law.

The regulations for the enforcement of the supplemental free alcohol law, effective September 1, will supersede the existing regulations, which will be completely revised, and will embody rules for the enforcement of the provisions of the law enacted last February. The existing code of regulations consists of five chapters dealing with the following subjects: 1. Denaturing bonded warehouses. 2. Dealers in denatured alcohol and manufacturers using denatured alcohol. 3. Special denaturants. 4. Alcohol recovered, restored and redennatured. 5. Restoring and redennaturing plants. To these subjects four additional chapters will be added in the revised code, as follows: 6. Small stills for agricultural purposes. 7. Transportation by tank cars, tank wagons and storage in tanks. 8. Central denaturing bonded warehouses. 9. Instructions to revenue officers.

Reduced Cost of Transportation.

The most important feature of the new regulations will deal with the transportation of denatured alcohol by tank car and tank wagon. This phase of the subject is of special interest to manufacturers and users of internal combustion engines, small power boats, &c., not only because the new law will facilitate the transportation, distribution and storage of denatured spirits, but also because it will materially reduce the cost and bring this product into close competition with gasoline. It has been estimated that the use of the tank car, tank wagon and storage tank will reduce the cost of handling alcohol about 5½ cents per gallon, or more than 15 per cent. of the present wholesale price of denatured spirits in five-

barrel lots. There is already a strong demand for small internal combustion engines equipped to burn alcohol in the agricultural sections of the Northwest, where, owing to the high price of all petroleum distillates and the decreased fire risk incident to the use of alcohol, the slight difference in price is not a controlling consideration.

W. L. C.

The Fan Blower as a Factor in Industrial Hygiene.

Unhygienic conditions in various industries have been studied recently by the Massachusetts State Board of Health. One important conclusion was that in most cases material improvement would be effected by suitable ventilating apparatus. Particularly is this true where dust or fumes emanate from machines, vats, furnaces, &c. The fan blower, because of its positive and controllable action, is applicable to nearly all conditions, and renders practically harmless many otherwise unhealthy occupations. The source of dust or fumes should be so hooded and connected with the fan as to immediately draw them away, preventing their entry into the room.

A familiar application of the fan for handling refuse and removing dust is in the planing mill, where each machine is hooded, and a vacuum is produced in the pipes by the fan to convey the waste material long distances, pass it through dust collectors and exhaust the clarified air. In shoe factories the fan removes the fine leather dust from the buffing wheels and other shoe working machines. Here close hooding is necessary to economize the volume of air handled by the fan. Exhaust systems are also advantageous in connection with machines for pointing the pins of horn and celluloid combs, "dusters" used for cleaning paper mill rags, hydrofluoric acid tanks of the glass cutter, polishing lathes used by lens makers, and in machine shops, textile mills, match factories, lead works and other industries.

In a system applied to a series of brass grinding and polishing wheels each hood is so constructed that by swinging a side plate the wheel may be readily replaced. Visors at top and bottom of the hood may be adjusted to cover any desired portion of the wheel. The lighter dust is carried away by the air passing through the fan, but the heavier metallic particles fall to a hopper below, whence they can be periodically removed.

The variety of applications of the fan blower which may be made to improve hygienic conditions is practically unlimited. Objectionable matters may be thereby removed or their influence reduced, materially enhancing the healthfulness of the employees, and whatever conduces to the health of the employee increases his efficiency and improves the product.

Drawbacks on Presses, Dies, &c.—The Treasury Department has issued regulations governing the payment of drawback on imported pig iron used in the manufacture of presses, dies and other machinery by the Ferracute Machine Company, Bridgeport, N. J., and the E. W. Bliss Company, Brooklyn, N. Y. In both cases "the quantity of imported pig iron which may be taken as the basis for the allowance of drawback may equal the quantity declared in the drawback entry after official verification of exported quantities, and to the quantity of imported pig iron contained therein may be added 5 per cent. to compensate for the loss in the manufacture thereof."

A British Government report estimates the production of certain minerals and metals in the world in 1905 to have been as follows:

Coal, metric tons.....	941,015,007
Copper, metric tons.....	738,202
Fine gold, kilos.....	580,087
Iron, metric tons.....	52,565,638
Lead, metric tons.....	874,697
Petroleum, metric tons.....	27,096,409
Salt, metric tons.....	14,251,142
Fine silver, kilos.....	5,547,818
Tin, metric tons.....	95,168
Zinc, metric tons.....	638,590

The 50-in. Streit Pulley Lathe.

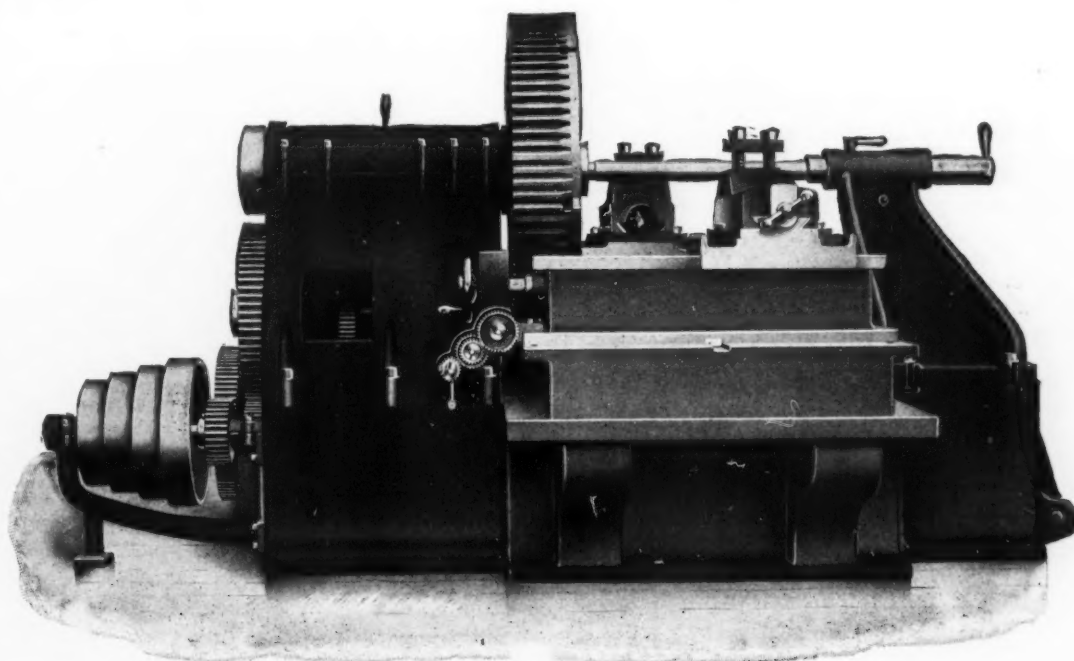
From time to time in these columns have been described what were termed special purpose machines, to distinguish them from the commoner and more general standard machine tools. To this class belongs the Streit pulley lathe now built by the Cincinnati Pulley Machinery Company, Cincinnati, Ohio. As with special purpose machines, the object is the more rapid execution of a limited class of work than is possible in a tool capable of a wider range of work. To this end it has been especially endeavored to make the handling of the work and adjusting of the machine expeditious. These lathes are built in six sizes, from 15 to 50 in., the latter being the one illustrated.

Two tools on opposite sides of the work operate simultaneously, and the rails carrying them are mounted on a table which swivels in the center. This table has a series of holes drilled on one side so that each hole when engaged by a pin sets the tool for a different taper. This simple arrangement positions both tools at once for the proper crowning of the pulleys. The tool rests travel

work the company recommends its 36-in. boring lathe and 36-in. facing lathe.

Electric Automobile Tests.

The mileage capacity of electric storage batteries, as used in an electric victoria-phaeton made by the Studebaker Automobile Company, South Bend, Ind., was interestingly demonstrated a short time ago in that city. A course was laid out over the city streets, partly asphalt and partly brick pavement, nearly two miles long. The first test was made to determine the mileage possible on one charge, using only the first or lowest speed. In a practically continuous run of about 24 hours the machine covered 154 miles before the stored current was exhausted. The second test, running altogether on the second speed, lasted 15 hours, during which time the car covered 135 miles on one charge of the battery. The mileage of the third test, running on the third speed, was 101 miles before the power gave out and the time eight hours. The final test, on the fourth or highest speed, lasted six hours, in which time the car covered almost



The 50-In. Streit Pulley Lathe Built by the Cincinnati Pulley Machinery Company, Cincinnati, Ohio.

uniformly in opposite directions, and to accommodate different diameters of pulleys the rails may be moved in or out. The work arbors are fitted into the spindle in the same manner as the center of an engine lathe, and by using bushings of different diameters, pulleys with various sized holes can be turned, so that a few arbors answer all purposes. A split clamping collar placed at each end of the hub of the pulley holds the bushing in place. The spindle is of steel, extra large in diameter, and has a hole through its entire length. The tailstock is removable and may be swung out of the way when placing work in the machine or when removing the work, a feature on which special emphasis is laid as being one not found in other pulley lathes.

All gears are of the widest face and coarsest pitch practicable, and are cut from the solid. Pinions are made from bar steel. Changes of feed are made instantly, anything from the finest to the coarsest being available. The worm and worm wheel operating the feeding mechanism are incased to protect them from dirt and chips.

The 50-in. lathe will turn pulleys from 24 to 50 in. in diameter, and up to 30-in. face. The machine is particularly adapted for turning and facing pulleys, large gears, flywheels, drums, couplings and work of a similar nature, but the boring and the facing of the hubs of pulleys or gears is not possible on these machines. For such

82 miles. The obstruction of the street by traffic occasionally made it necessary to waste time and power by stopping, which of course, lessened the total mileage of the car. The model 16 electric victoria-phaeton which was used in these tests is only claimed to have a mileage capacity of 40 miles on one charge of the battery, so that in this test it actually accomplished 100 per cent. more than that rating on the high speed and 150 to 285 per cent. more on the lower speeds.

Commercial failures in the United States, according to statistics compiled by R. G. Dun & Co., were 5607 in number, and \$69,568,662 in amount of defaulted indebtedness in the first half of 1907. This is the best statement as to number of bankruptcies for the corresponding six months of any year since 1899, but liabilities were slightly above the average, on account of a few very large failures in New York, notably Milliken Brothers, Incorporated. In the first half of 1906 there were 5612 failures, involving \$62,644,074. Trading failures, not including financial institutions, numbered 4120, with defaults of \$26,744,786, against 4154 in the same month last year, when the amount involved was \$25,505,978. In the manufacturing class, 1295 failures supplied liabilities of \$36,684,648, against 1260 failures last year for only \$21,989,522.

A Remarkable Ore Movement.

Preparations for Larger Mining and Shipping Operations.

DULUTH, MINN., July 13.—Shipments of iron ore continue and in an ever increasing volume. The Duluth, Missabe & Northern Road is moving ore at the rate of 2,250,000 gross tons monthly, and on one recent day shattered all records by the receipt and shipment of 126,000 tons. It has frequently passed a daily tonnage of 100,000 tons, and this is not now considered much of a record. There is a possibility that a question of wages for men on docks may arise any day, and may result in a temporary reduction of shipments at all head of the lake docks. Dockmen were settled with at the beginning of the season on a basis of \$2.25 and \$2.50, the latter for night men, for the season until cold weather; but the men do not seem to care to maintain their side of the agreement and want an advance of 25 cents a day.

The recent record of 126,000 tons for the Missabe Road was equivalent to loading 15 of the largest type of modern ships, and to the receipt of 65 trainloads from the mines. This means that a train of ore passes over the entire line of the road every 22 min. of the 24 hr., empties going back to the mines at the same intervals. With this there have been no serious accidents on the line and traffic is proceeding with great ease. The road is in the enviable position of having more equipment, both in rolling stock and terminals, than is necessary for this volume of traffic, and can increase considerably if mines can supply the ore and ships can take it away. This position is somewhat unique for an ore road nowadays and is due to the big policy of the Steel Corporation in providing amply for its business. The corporation is now making arrangements for a still greater traffic on both of its ore roads next year, and expects the tonnage of 1908 to be in excess of that of 1907. The Great Northern Road, too, is caring for its ore business with more ease than in any recent year, and there are few, or no, complaints from mines along its lines.

The Supply of Lake Tonnage.

Unless there is some settlement of the labor difficulties at lake shipyards the supply of tonnage for 1908 will hardly keep pace with the increase of business. While there is a great addition to tonnage afloat already this year, many ships contracted for are not yet ready and are indefinitely delayed in stocks, while the construction of more is practically at a standstill. The number of vessels ordered for 1908 is small, and some orders are being rescinded on account of the probable delay in getting them out. There has been some change in sentiment as to the best type of lake carrier, and the majority of ships ordered now are of a smaller size than the leviathans which were built last winter for the Steel Corporation and others. Vessels of capacity for 8000 to 9000 tons seem to be the accepted thing just now, though the Tomlinson syndicate of Duluth is to build two 11,000-ton vessels for spring delivery. It is felt that parties not controlling tonnage nor owning docks for delivery and receipt of ore—in other words, not like the Steel Corporation—would better build ships of a slightly smaller size in order to be always available for loads and berths. The corporation, doubtless, will go on with its programme of construction of ships of the largest possible type; indeed, the action of the Tomlinson syndicate indicates this.

Menominee Range More Active.

There has been a very important development in certain parts of the Menominee range during the past year or two, equaled by nothing on Lake Superior aside from the Mesaba. This has been especially noticeable in the Iron River and Stambaugh districts on the west side of Iron County. Immediately around Iron River there is much activity. An example is the new James mine, belonging to the Mineral Mining Company, in which are officials of the Pewabic Mining Company. The James was explored some years ago by Crerar, Clinch & Co. of Chicago, but was abandoned on account of the poor outlook for iron in 1904. The James Company has now developed

good deposits of ore, and a considerable shipment will be made this year. Just south of the James is the Konwisky fee, also leased by the Mineral Mining Company and under development by a large shaft and drifting. The same company has another property south of the James, on which diamond drills are operating and on which a large body of ore has been proved to exist. This gives the Mineral Company 800 acres in one block, all of which looks very well, and on which a large mine is sure to be developed. The Huron Mining Company is exploring northeast of the James, and while no ore has been cut in the pits, the ore bearing formation is known to cover almost the entire tract. A short distance north is the McFarland, on which a shaft has been sunk 145 ft., with every indication of ore shortly. All these mines will be wet and the pumping machinery to be installed as openings grow will be considerable. Nearby, in the Stambaugh Valley, and close to the Baltic, is a new exploration called the Kinney, where a shaft that has already cut ore is going down. Drifting will be undertaken at greater depth. Oglebay, Norton & Co. have cut ore in section 8-42, west of other developments, and is at work adjoining the McGillis of the Oliver Company, where a shaft is down and larger machinery is to be installed at once. Corrigan, McKinney & Co. have been developing with drills northwest of Stambaugh and are enlarging the ore area materially. Previously developed mines of the same district are all busy and the shipments from that section of the Menominee should be larger than in any previous year. About 3 miles west from Crystal Falls Maas and others are developing by diamond drill and have hopes of finding a mine.

The Oliver Mining Company's Model Town.

The construction of a model city at Coleraine, western Mesaba range, for the Oliver Iron Mining Company goes steadily on, and there is now to be erected a company headquarters costing more than \$100,000. An \$80,000 schoolhouse, fine bank building, hotel, &c., have been constructed and are occupied. In the hotel is the only saloon to be permitted in the town. Concrete sidewalks, concrete bridges over railroad tracks, extensive grading work and creature comforts of all classes are being provided. The question is frequently asked, Why does the Oliver Company spend so much more money at this location than it has ever in other towns where it is a mining factor of importance? It is easy to answer: The Oliver Company has here all the ore of the district. It had charge of development from the cutting of the first tree to clear away the site of mines, enabling it to carry out development in its own way without being hampered by previous occupiers and outside or adverse interests. Lastly, it has in that immediate vicinity probably more ore than has ever been owned by any single concern in one group of adjacent properties. Very few people appreciate what the Oliver Iron Mining Company has in its Coleraine deposits, even without the addition of the Great Northern ores in the vicinity, and which it will doubtless ultimately operate. Large mining companies have quite generally come to the conclusion that model towns for their men are important, especially since good men are more than ever needed and are hard to hold in unpleasant and mediocre surroundings.

Another model town, though on a smaller scale, is to be built at Princeton in the Marquette District, by the Cleveland-Cliffs Iron Company. A tract of 300 acres is to be cleared immediately, 7 miles of streets built, and the same length of sewer, water mains, &c., to be laid, and 6 miles of fences erected, all before a single dwelling is to be permitted. A number of houses will be erected by the company and will be sold on long time and at practically cost to those employed or going into business at the town.

D. E. W.

Charles O. Jenkins of Cleveland, Ohio, has closed a contract with the American Shipbuilding Company for a 9000-ton lake steamer for 1908 delivery. The boat will be 524 ft. over all and will be a duplicate of the steamer Charles O. Jenkins, which was launched at the Wyandotte yard of the American Shipbuilding Company this month.

The Improved Heald Rotary Surface Grinder.

A number of important improvements have been made in the rotary surface grinder built by the Heald Machine Company, Worcester, Mass., as shown in the illustrations of the motor driven dry grinder, Fig. 1, and the belt driven wet grinder, Fig. 2. The machine is used for grinding rings, disks, dies, thrust collars, cutters, saws, &c., and is particularly of advantage in the grinding of piston rings for automobile and other internal combustion engines. In the form as then manufactured the machine was described in *The Iron Age* May 31, 1906. The transmission has now been somewhat changed. Flat belts have been substituted for round, both in the main drive and for the automatic feed, it having been found that the round belt has a tendency to fly off and transmits less power than the flat belt. An automatic tightener has been added for the feed belt, clamped on the end of the automatic feed box, as shown in the illustrations, next to the feed shaft pulley. A hand lever, seen just above and in front of the cone pulley, has the dual purpose of

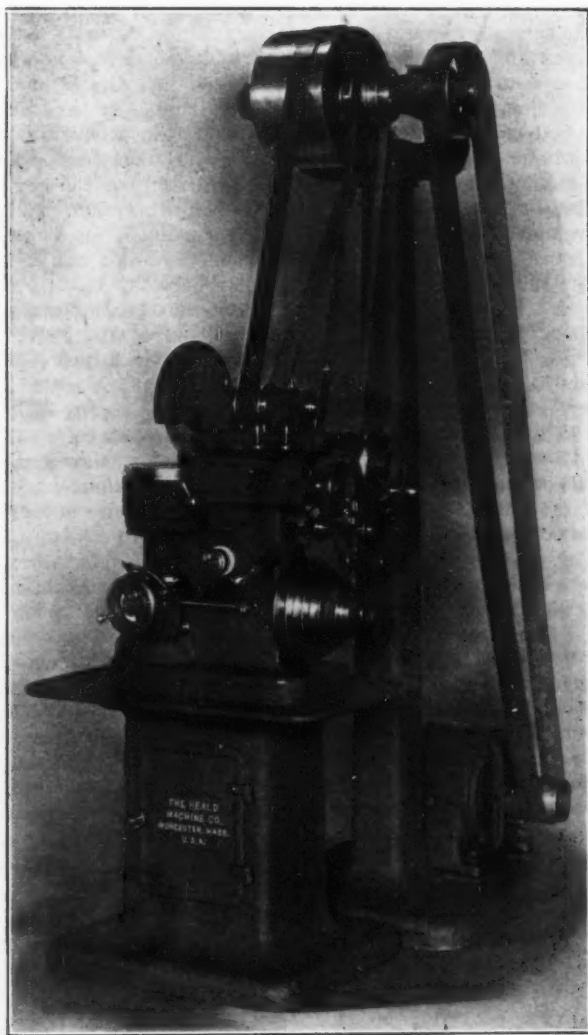


Fig. 1.—The Improved Dry Grinder Built by the Heald Machine Company, Worcester, Mass.

operating a belt tightener and a friction brake, by means of which latter device the chuck may be stopped quickly at any desired point.

The wet grinding machine is furnished with a rectangular water box and water guard and supply pipe. The dry grinder has a new dust guard, tunnel shaped and arranged for connection with an exhaust system. The machine has been made heavier throughout, with larger wearing surfaces. A closet has been put into the pedestal, containing two shelves for storing extra grinding wheels, &c.

General features of this grinder are a magnetic chuck for holding the work, micrometer adjustment for thick-

ness of work, angular adjustment for grinding convex or concave surfaces, variable cross feed to the grinding wheel, automatic vertical feed to the chuck and adjustable bearings for taking up all wear.

Lake Superior Mining Institute.

The thirteenth annual meeting of the Lake Superior Mining Institute will be held at Duluth and the Minnesota iron ranges July 24 to 27. One fare for the round

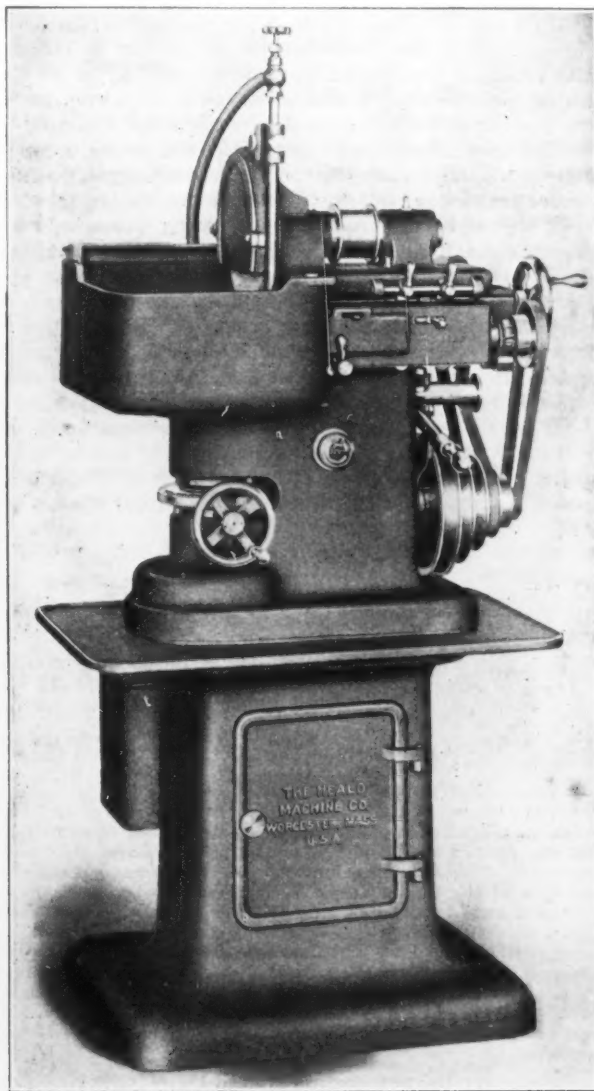


Fig. 2.—The Heald Wet Grinder as It Is Now Built.

trip has been offered by the Duluth, South Shore & Atlantic Railway and one and a third fare from all other lines reaching Duluth from other parts of the lake regions. The programme begins on the afternoon of Wednesday, July 24, with a visit to the power plant at Carlton of the Great Northern Power Company, which will then have in motion the largest water power unit in existence, 10,000 hp., and will be installing two more of the same capacity. At that evening's meeting in the Commercial Club rooms at Duluth one leading paper will be by the chief engineer of the power works. Trains will be provided for visits to various points of interest all along the Vermillion and Mesaba ranges, including the new Coleraine section, close to the Mississippi River, where great development is under way.

The New England Foundrymen's Association held its July meeting in the form of an outing at the Point Shirley Club, Winthrop, Mass., July 10. No business was transacted, the occasion being one of good fellowship only. After dinner some of the members visited pleasure resorts of the vicinity.

French Tariff Negotiations.

WASHINGTON, D. C., July 16, 1907.—Reports in the daily press to the effect that the Administration is much disturbed because of the apparently unfavorable attitude of the French Government toward the reciprocity treaty, the project of which the French Ambassador has just conveyed from the State Department to the French Minister of Foreign Affairs, are entirely misleading. There is good ground also for the statement that the feeling on the part of the French Government is misrepresented in the cabled dispatches to the American press. It can be said on the best authority that the negotiations are now progressing satisfactorily, and it is possible to outline the principal features of the project, as well as to describe the conditions under which it has been brought to its present status.

There have been many ups and downs in the negotiations with the French Government since the North Customs Commission undertook to formulate the treaty with Germany, which has proved such a strong incentive to induce France to make a similar convention. Early in June, however, the interest of the Paris Government appeared to be at a very low ebb, and the movement against American products in the Chamber of Deputies was brought to a crisis by the introduction of a bill placing a practically prohibitory duty on American petroleum, presumably in the interest of French alcohol producers, who hope to find a market as a fuel and illuminant for large quantities of spirits heretofore employed in making alcoholic beverages, the manufacture of which it is now proposed to prohibit for the benefit of the natural wine makers.

A Forgotten Law.

At this juncture the attention of Secretary of State Root was drawn to a wellnigh forgotten provision of law found in section 5 of the so-called meat inspection act of 1890, which was passed for the double purpose of prohibiting the exportation of inferior meat products and of preventing foreign governments from adopting arbitrary regulations restricting this trade. This section referred to is as follows:

That whenever the President shall be satisfied that unjust discriminations are made by or under the authority of any foreign State against the importation or sale in such foreign State of any product of the United States, he may direct that such products of such foreign State so discriminating against any product of the United States as he may deem proper shall be excluded from importation into the United States; and, in such case, he shall make proclamation of his direction in the premises, and therein name the time when such directions against importation shall take effect, and after such date the importation of the articles named in such proclamation shall be unlawful. The President may at any time revoke, modify or renew any such direction as, in his opinion, the public interest may require.

Secretary Root at once recognized the formidable character of the weapon placed in the President's hands by the provision above quoted. While it is a principle for which all nations contend, that the adjustment by a country of its tariff on any basis whatever cannot be objected to by another nation, provided the rates apply equally to the products of all countries, a principle which renders ineffective ordinary diplomatic representations, this statute makes the President of the United States the sole judge as to whether the products of the United States are being discriminated against, either directly or indirectly, and clothes him with power absolutely to exclude merchandise sought to be imported from the offending country.

Secretary Root put the case very forcibly to the French Ambassador, stating frankly that if any of the pending bills menacing directly or indirectly American exports should be enacted by the French Parliament, he would recommend to the President the invocation of the provisions of the act of 1890. It was further intimated that any prohibition of French imports by the President would probably include champagnes, silks and other leading products of French manufacture. The Ambassador was apparently much impressed with Secretary Root's statement, and within a day or two, after communicating with his Government, assured the Secretary of State that

none of the pending bills would be enacted, and, further, that the French Government stood ready to negotiate a satisfactory reciprocity agreement with the United States under the terms of section 3 of the Dingley act, and would probably concede the minimum rates of the existing French tariff to a number of important American products in addition to those enumerated in the existing treaty of 1898.

Outlines of the Treaty.

When the French Ambassador returned to Paris a few days ago he took with him the project of the new convention. On the part of the United States it concedes the minimum rates of section 3 of the Dingley act to argols, brandies, still wines and works of art, which are provided for in the existing treaty, and adds thereto a 20 per cent. cut in the duty on champagnes. Reciprocally France continues the existing minimum rates on American canned meats, fresh and dried fruits, certain classes of lumber and pork products, including lard and its compounds, and adds thereto a considerable list, embracing some of the most important of American manufactured products.

This additional list is in tentative form and embodies certain alternatives, the object being to give the French Government some leeway in preparing a schedule of concessions that would be satisfactory to the State Department and that might be yielded without serious embarrassment to the French administration. The list includes machinery, sheet iron and tinware and certain other metal products, shoes and leather and food products not included in the existing convention. Machinery was placed in the schedule chiefly as the result of the criticisms of the recently concluded German convention, which excluded machine tools and other important kinds of machinery. This feature of the French convention has been the subject of attack in certain of the Paris newspapers, but it is the understanding here that the French Government regards it favorably. An element of the French press is working for a reduction exceeding 20 per cent. in the American duty on champagnes, on the ground that unless the reduction is greater there will be no change in the price to the consumer and hence no increase in importations, the concession going wholly into the pockets of the importers. This argument is more or less fallacious, as large quantities of French champagnes are sold directly to consumers in original packages, the cost of which, under ordinary trade conditions, would be reduced by nearly the entire amount of any cut in the tariff that might be granted.

The latest official advices here indicate that very satisfactory progress is being made in the negotiations which are now being conducted with the co-operation of the French Ambassador and the American Embassy in Paris, and it is believed that when Secretary Root returns to Washington in September the convention will be ready for signature. As the reductions conceded by the State Department are within the scope of section 3 of the Dingley act the treaty will not require ratification or approval at the hands of either house of Congress.

W. L. C.

The Load Factor in Water Power Plants.—In determining upon the design of water power plants, as well as steam plants, load factor is an item of great importance. When the load factor is less than unity, and a stream providing no storage is furnishing the power, energy is inevitably wasted whenever the load is less than the maximum capacity of the stream, says the *Journal* of the Franklin Institute. With sufficient storage capacity, a load factor of less than unity may be served without waste of hydraulic energy. As a matter of fact, however, sufficient storage is rarely obtainable in large plants operating under a head of less than 100 ft., where the load factor falls below 60 per cent., because the quantity of water required becomes too great to be stored in available basins. After all has been done that is possible in obtaining the best solution of the storage proposition it often results that there remains a residuum in the problem which can be handled economically only by steam or gas engine auxiliaries. The legitimate field for these expedients is now well recognized, and no new hydraulic installation should be studied without giving them due consideration.

Money Stringency in Canada.

TORONTO, July 13, 1907.—While there is no apparent slackening of trade in Canada, its activity is being reined in by financial stringency. That is to say, the demand for merchandise of all kinds keeps up, but the expansion which other conditions would appear to warrant is not going on at its former rate, owing to lack of funds. In every part of the country confidence is in as good tone as ever, and many concerns would enlarge their works and add to their equipment if only the money were forthcoming for such extensions. The point should be emphasized that, whereas tightness of money is not uncommonly due to mistrust of trade conditions, in Canada's case it is attributable to abounding faith in the trade conditions. The great volume of trade has, so to speak, sapped up all the available money, and there is no margin for continuing the onward movement at the same rate. Every bank has now more good customers than it can keep supplied, and therefore has to curtail the accommodation it gives to each, advising many that for the present they must positively give up new capital projects and continue on their existing scale of operation. For a manufacturer to turn out as much product this year as his works produced last year more money is required, for the prices of material are higher, and in many cases so is the rate of wages.

A Transportation Breakdown.

Materially, the country has outgrown its national outfit. Though railroad mileage has increased rapidly and though car shops and locomotive works have been crowded with Canadian business for years, the transportation system was utterly overwhelmed last autumn. The present shortage of money would not have been so acute if the railroads had been equal to the task of handling the Western crop before the close of navigation in 1906. About 36,000,000 bushels of wheat bound outward was held over all winter on the other side of the lakes because of the inability of the railroads to get it to Port Arthur and Fort William in time. The money tied up in this wheat has not yet been fully released, and manufacturers are incommoded for the want of it.

Another cause which contributed to the money scarcity was the speculation in land. Western farmers, whose money formerly went to swell deposits in the banks began, almost with one consent, to buy lands, in some cases that they might have broader acres to cultivate and in others that they might sell at an advanced price. Much of the money thus invested vanished from the circulation, no small portion of it falling into the hands of speculators living in the United States.

Another factor in the stringency is the great preponderance of imports over exports, which calls for the sending of large amounts abroad for the settlement of the country's balance.

Why the Currency Is Not Increased.

If, it may be asked, money is scarce largely because trade is flourishing, why is the volume of the country's currency not increased? In such a state of affairs banks must be making money. That being so, and there being no arbitrary limitation upon the note-issuing power of Canadian banks, such, for example, as the exclusive use of national bonds as a substratum of circulation, it would seem a simple matter to increase Canada's currency very remedially. All that is needed is for the banks to increase their capital and to issue notes against the new subscribed and paid-up shares. This is a thing not to be done with so great facility as might be supposed. In the first place, the banks are extremely cautious. In the last six or seven years they have made capital increases aggregating a very substantial sum, and they are constantly on the lookout for signs of commercial reaction. If there should be a sharp falling off in trade and a consequent lessened demand for funds, the problem of earning dividends on a swollen capital might prove embarrassing to them. In the second place, notwithstanding the lack of money, or rather, in consequence of it, there is little demand for bank stocks. At the present time it would not be easy for one of the most trusted banks to

get subscribers for a \$1,000,000 of new stock; the money to buy such stock is hard to disengage from any business to which it is committed. Bank shares have fallen sharply. Those of one of the solidest banks dropped 60 points in a very short time, and in the same period there were shrinkages of 40 points in the price of some of the best. The effect of increasing bank shares and issuing currency against them is to convert fixed capital into liquid capital, an operation very difficult to perform at the present time, for in Canada funds for permanent investment are scarcely freer than money for ordinary commercial requirements. This is shown by the extreme difficulty experienced by municipality after municipality in selling debentures which a few years ago would have been eagerly taken at high prices by the agents of British houses.

Uncertain Factors.

Of the uncertainties restraining the banks from venturing out on a larger scale of capital two may be indicated. One, referred to above, is the prevalence of speculation in land. The other is doubt as to the crop that is now near maturity. As to the land speculation, it has been brought to rather an abrupt halt by the withdrawal of funds. In the same way stock speculation has been arrested. Of the crop prospects it is to be said that they are better than the gloomy conditions of the late spring gave reason for hoping. A smaller acreage was sown with wheat, but the state of the crop points to a total yield not much below that of 1906. C. A. C. J.

Producer Gas for Soldering Cans.

As heretofore gasoline gas and city gas have been used for soldering cans it will probably be of interest to canners and can manufacturers to learn that there are now two plants—the first of their kind—in successful operation using producer gas, which is considerably cheaper than the gases above mentioned. Both plants were installed for the Wisconsin Condensed Milk Company, one at Burlington, Wis., and the other at Pectonica, Ill., by the Industrial Gas Company of New York. Each has an hourly capacity of 4000 cu. ft. of producer gas of about 135 B.t.u. per cubic foot. The gas produced from 100 lb. of anthracite coal is equivalent in this kind of work to 1000 cu. ft. of city gas. As the cost of 100 lb. of anthracite coal (at \$4.50 per ton) is 22.5 cents, while the cost of 1000 ft. of city gas is \$1.10, the saving effected is large. Each plant consists of a generator, saturator, board scrubber, dry scrubber, exhauster and by-pass (for effecting a uniform pressure of about 1½ lb.). A special burner is used, by means of which a large volume of gas is brought to the burner at low velocity and is burned after being thoroughly mixed with air.

The approximate horsepower of gas engines may be calculated by empirical rules formulated by Dugald Clerk, the eminent British authority. He uses two rules, one for engines not exceeding 12 hp., and the other for larger engines. In both formulas, D represents the diameter of the cylinder in inches, and N the number of cylinders. The mean effective pressure and the piston speed being about constant, are taken care of in the constants used in the expressions. For the smaller type the formula is

$$\text{Horsepower} = \frac{D^3 \times N}{3}$$

while the larger type uses the same formula, but the constant becomes 2.4 instead of 3, as used in the denominator. The mean effective pressure in each case is assumed to be 70 lb. per square inch, while the piston speed is 800 ft. per minute for the smaller engine, and 1000 ft. for the larger.

A head of 1100 ft. has been utilized in a hydro-electric plant on the Siagne River, in the Maritime Alps of southern France. Pelton wheels are used to develop 4500 kw., and are supplied by penstocks brought down to the station almost vertically for a distance of over 3000 ft. For assistance in regulating 4-ton flywheels are mounted on the generator shafts.

The Plurality-Die Bolt Cutter.

The dies are the feature of most interest in the machine illustrated in Fig. 1, and are responsible for the name—the Plurality-Die Bolt Cutter—given it by the maker, the Mummert, Wolf & Dixon Company, Hanover, Pa. The dies are in three parts, each resembling a milling cutter, as may be seen in the view of the head given in Fig. 2, but in reality it is very different, for the series of cutting edges arranged around the circumference are dissimilar. The three pieces are duplicates of each other, so that when like cutting edges are presented toward

head on the back engaging with a circular rack. The notches correspond in number and position to the dies and readily locate them when changing from one to another. It is not necessary to remove the die wheels to change from one die to another; the partly countersunk nut on the front of the die is loosened and then the stud is pushed back which disengages the notches from the rack. The die wheel can then be turned until the die wanted points toward the center of the head. A spring then pushes the stud forward into place and the nut is again tightened. This can all be done very quickly.

The dies can be adjusted radially while the machine

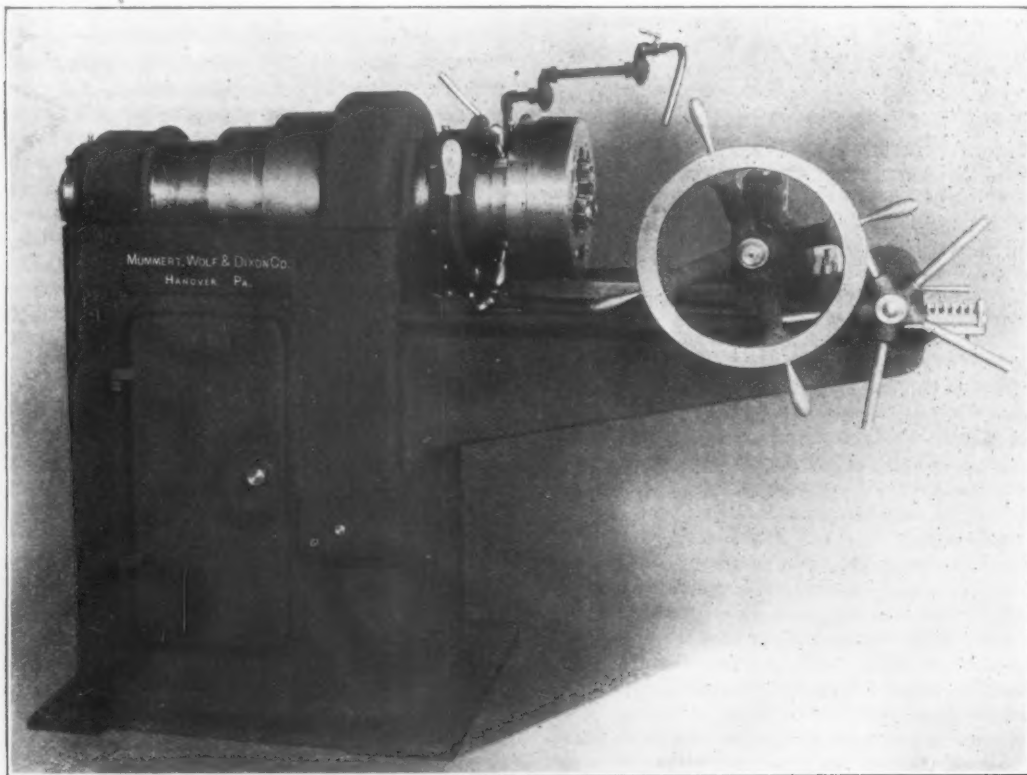


Fig. 1.—The Plurality-Die Bolt Cutter Built by the Mummert, Wolf & Dixon Company, Hanover, Pa.

the center of the head a set of three dies is in position for cutting the corresponding bolt thread. In the case illustrated there are 12 dies on each die wheel, but they are also made with 11, 10, 9 or 8, depending on the sizes and threads it is desired to cut, by omitting the use of one or more of the spaces available for cutters.

With this machine all varieties of threads commonly used can be cut with one or two sets of these die wheels, and it is not necessary to have a large number of pieces as with the ordinary dies. Should a machine be used for cutting only a few different sizes several or all of the cutting edges on each die wheel can be duplicates; in fact, the dies can be made for any assortment of sizes desired. The die wheels are made so that all cutting edges of the same size are interchangeable with each other on the same set of die wheels, or with the same size on any other set. For instance, if a die on one of the wheels of a set should be broken or worn out, the remaining two dies on the other wheels can be used with another die of the same size on this wheel or any other wheel of the same number. (The number here means the die number and not the number of dies on the wheel.) Three die wheels constitute a set. By using three the stock is more readily held in the center and one die cuts just as much as the others; in other words, it distributes the cutting of the thread evenly on the three die wheels. The die wheels can be easily sharpened the same as an ordinary die by grinding with a bevel edged wheel.

The head is simple in construction, as is seen by the sectional view, Fig. 3. It has no intricate parts to get out of order. Each die wheel is held rigid and firm by a tempered tool steel stud or bolt which has a notched

is running, by turning the four-handled adjusting ring back of the head. This ring is graduated, indicating the exact amount of adjustment. The machine has a simple,

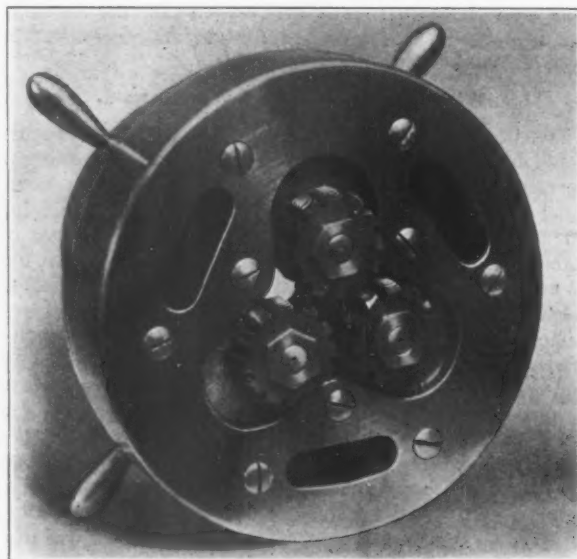


Fig. 2.—The Die Head.

positive, automatic throw out. Arrangements for automatically closing the dies are also provided when desired. No gears are exposed on any part of the machine. The

back gearing is suspended beneath the cone pulley in the top of the pedestal. The front bearing is long and is close up to the head. The journal of the spindle running in this bearing is tapered and provision is made at the back of the machine to take up wear.

The oiling system and arrangement for disposing of chips is clearly shown in the sectional view, Fig. 3. The oil pump works when run in either direction, so that it is not necessary to change the belt when cutting left hand threads. The construction and operation of the

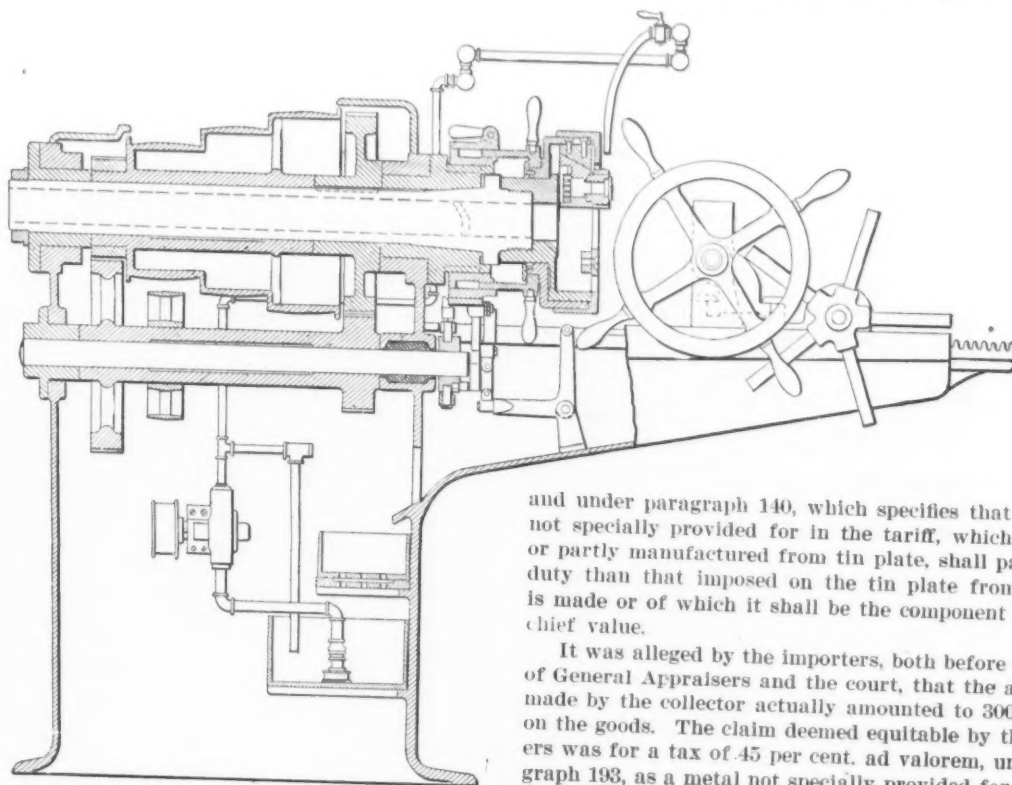


Fig. 3.—Sectional Elevation of the Plurality-Die Bolt Cutter.

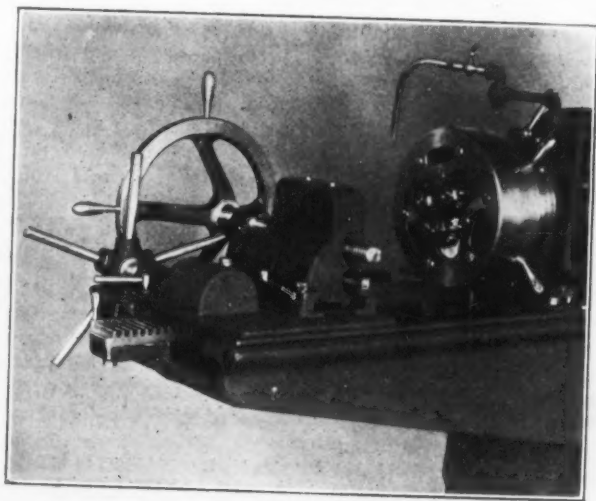


Fig. 4.—Detail from the Rear, Showing the Vise and Carriage.

vise and carriage are apparent from the view given in Fig. 4. Substantial and simple construction, with as few parts as possible, was aimed at in the design of the entire machine, and it has been made so compact that a relatively small amount of floor space is required.

Die Foerdertechnik is the title of a new technical journal which is to be issued at Berlin by M. Wille of Berlin-Halensee, Germany. It will deal with appliances for handling materials, including pumps, compressors and blowers. The first number includes an article by Dr. Wintermeyer on swinging tower cranes and by J. Wallich on high pressure centrifugal pumps.

The Duty on Circular Tin Disks.

The United States Circuit Court for the District of Maryland has denied the claim of John Reeve and others for lower duty on importations of circular tin disks varying in diameter from 1½ to 3 in. The articles were entered at the Custom House at Newport, Vt., and immediately became the subject of litigation. Duty was assessed at the rate of 1½ cents per pound under paragraph 134 of the Dingley act, providing for "tin plates,"

and under paragraph 140, which specifies that no article not specially provided for in the tariff, which is wholly or partly manufactured from tin plate, shall pay a lower duty than that imposed on the tin plate from which it is made or of which it shall be the component thereof of chief value.

It was alleged by the importers, both before the Board of General Appraisers and the court, that the assessment made by the collector actually amounted to 300 per cent. on the goods. The claim deemed equitable by the importers was for a tax of 45 per cent. ad valorem, under paragraph 193, as a metal not specially provided for. Counsel for the importers advanced the argument that the tin disks are made from tin cans, and that they are, therefore, articles made from articles that are made from tin plate, and consequently they are not articles made from tin plate. Another point by the importers was that because the production of the disks was not the primary object of the manufacturing process to which they owe their existence, the main purpose being the fabrication of tin cans, they are therefore not dutiable as "articles manufactured from tin plate." Both of these contentions were overruled by the lower tribunal, and this action the court now affirms. The original assessment is upheld.

Evidence exists that a work similar to the famous Simplon tunnel, but on a smaller scale, was executed some 24 centuries ago. Owing to the bad state of the water supply of Jerusalem, the King ordered a reservoir to be made at the gates of the city, to which water was to be brought from various springs. The Shiloh tunnel, by means of which water was brought down from a source to the east of Jerusalem and poured into the pool of Siloam, was 1080 ft. long, and is in a straight line. It has been learned that work was commenced at both ends of the tunnel, and the direction was altered a number of times. The floor of the tunnel is finished with great care. The width varies from 1.9 to 3 ft., and the height from 3 to 9 ft. There is much speculation as to how these engineers gauged their direction so well as to be able to recognize and correct errors in alignment, as was certainly done.

Gayley dry blast plants are under construction by Guest, Keen & Nettlefolds, Limited, at Cardiff, Great Britain; the Warwick Iron & Steel Company, at Pottstown, Pa., and the E. & G. Brooke Iron Company, at Birdsboro, Pa. These plants are approaching completion, and it is expected that they will be placed in operation this summer. Frank C. Roberts & Co., Philadelphia, are the engineers for these plants.

The Production of Copper, Spelter and Lead.

The United States Geological Survey has just issued preliminary statements showing the production of copper, spelter and lead in the United States in 1906.

Copper.

The statistics of copper have been collected by L. C. Graton, who reports that the production of copper in the United States in 1906 was 906,591,947 lb. This is an increase of about 18,000,000 lb., or 2 per cent., over the production of 1905, compiled on the same basis, and is a new record. In the following table the production is apportioned to the States in which the copper was mined:

Production of Copper in the United States in 1906.

Lake Copper and Fine Copper Content of Blister.			
State.	Pounds fine.	State.	Pounds fine.
Alaska	8,685,646	New Mexico.....	7,099,842
Arizona	262,566,193	North Carolina....	582,209
California	28,153,202	Oregon	545,859
Colorado	7,427,253	Tennessee	17,809,442
Georgia	17,182	Texas	51,377
Idaho	8,578,046	Utah	50,329,119
Massachusetts	9,744	Vermont	11,694
Michigan	229,695,730	Washington	290,823
Missouri	54,347	Wyoming	106,177
Montana	283,485,517		
Nevada	1,090,635	Total.....	906,591,947

Of this amount, 816,386 lb. in blister were produced in foreign smelters from materials exported from the United States. In addition to the total given, 54,543,116 lb. were produced as blister in domestic smelters from foreign ore, concentrates and matte, while blister imported from foreign sources containing 136,826,906 lb. fine copper was electrolytically refined in this country.

The production of electrolytic copper in the United States in 1906, based on actual returns from all refineries, was as follows:

Production of Electrolytic Copper in 1906.

	Pounds.
Electrolytic copper from materials of domestic origin	648,614,592
Electrolytic copper from materials of foreign origin.....	191,370,922
Total electrolytic copper.....	839,984,614

The figure for domestic production includes 24,017,833 lb. lake copper, which was refined electrolytically and an indeterminate but very small quantity recovered from scrap. The production of domestic nonelectrolytic copper refined by the furnace process and known as casting copper amounted in 1906 to 28,345,263 lb. This does not include lake copper. The total production of refined copper of domestic origin is shown in the table below:

Production of Refined Copper in 1906.

	Pounds.
Lake (exclusive Lake electrolytic).....	205,608,382
Electrolytic, total domestic.....	648,614,592
Casting	28,345,263
Total refined.....	882,568,237

Stocks.—Complete returns show that the following stocks were on hand at the lake and electrolytic refineries:

Stocks of Copper at Refineries.

	Pounds.
January 1, 1906.....	118,244,028
January 1, 1907.....	92,470,792
Stocks depleted during 1906.....	25,773,236

These figures do not include undelivered sales. Stocks carried by consumers have not been estimated. In addition to these stocks at refineries, there was at smelters or in transit to refineries blister copper to the amount of 110,000,144 lb. on January 1, 1906, and 100,630,245 lb. on January 1, 1907.

Consumption.—The apparent consumption of refined copper in the United States in 1906 was about 680,000,000 lb., as compared with about 600,000,000 lb. in 1905. One method of deriving this figure is shown below:

Consumption of Refined Copper in 1906.

Total domestic refined copper produced in 1906.....	882,568,237
Imports for consumption, foreign origin.....	215,402,841
Stock at refineries January 1, 1906.....	118,244,028
Stock at refineries January 1, 1907.....	92,470,792
Total available supply.....	1,216,215,106
Exports	446,750,711
Stock at refineries January 1, 1907.....	92,470,792
Total withdrawn from supply.....	539,221,503
Apparent consumption.....	676,993,603

This is in addition to the quantity, perhaps as much as 50,000,000 lb., which was recovered from old copper, drosses, residues, &c., and re-entered the market, mostly in the form of casting copper.

Spelter.

J. M. Boutwell of the United States Geological Survey reports that the production of spelter was as follows in 1906, the increase over 1905 amounting to 20,921 tons of 2000 lb., or 10.3 per cent.:

	Tons of 2000 lb.
Colorado	6,260
Eastern and Southern States.....	29,930
Illinois	47,939
Kansas	129,564
Missouri	11,077
Total.....	224,770

Mr. Boutwell figures the consumption as follows:

Consumption of Spelter in the United States in 1906.

Supply:	Net tons.
Stock beginning of year.....	3,463
Production	224,770
Imports for consumption.....	2,043
Total available.....	230,276
Withdrawn:	
Stock at close of year.....	3,824
Exports, foreign, in bond.....	1
Exports, domestic.....	4,670
Total withdrawn.....	8,495
Apparent domestic consumption.....	221,781

Lead.

The report of J. M. Boutwell of lead contains the following statement of the production of refined lead, which embraces all desilverized lead produced at works in this country and the pig lead recovered from the Mississippi Valley lead ores. It is exclusive of a product of 10,546 tons antimonial lead reported by refineries. About 25,000 tons of pig lead derived from Mississippi Valley ores was desilverized, and is therefore included under desilverized lead and not under soft lead. These totals have been compiled from actual returns made to this bureau by all known refineries operating in the United States:

Production of desilverized lead.....	313,886
Production of soft lead.....	90,783
Total production of refined lead.....	404,669

Consumption.—The totals in this table include end products only. Thus: stocks, both domestic and foreign, and production are in terms of refined lead, imports and exports are in finished state, and antimonial lead is in marketable form, while lead in ores and bullion is excluded. The figures for refined and antimonial lead, and for domestic stocks are based upon direct returns from all known operating refineries, and from all known smelters treating lead ores from the Mississippi Valley. All other figures are from statistics compiled by the Bureau of Commerce and Labor:

Supply:

Stock, domestic, beginning of year.....	3,975
Stock, foreign, beginning of year.....	56
Total production, refined lead.....	404,669
Total production, antimonial lead.....	10,546
Imports, foreign refined.....	11,763

Total available.....431,009

Withdrawn:

Stock, domestic, close of year.....	4,571
Stock, foreign, in bond, close of year.....	64
Refined in bond from foreign base bullion and ores and exported.....	48,558
Lead in manufactures exported under drawback	1,516

Total withdrawn..... 54,709

Apparent consumption of lead in the United States in

1906	Quantity.	Per cent.
1905	29,285	8.44

Mr. Boutwell also presents a table showing the source of the lead produced. Idaho furnished 117,117 tons; Missouri, 111,075 tons; Utah, 56,260 tons, and Colorado, 50,497 tons, the total from domestic ores having been 347,695 tons. Chiefly from Canadian and from Mexican ores, 56,207 tons were derived, this being exclusive of 12,339 tons of Mexican bullion.

The Rheutan Dished Boiler Head.

The numerous bracing stays required to support that part of a boiler head above the tubes have long been a source of annoyance and expense, both in construction and operation of steam boilers. Many schemes have been tried to make their presence less objectionable, but hitherto it has seemed impossible to entirely eliminate them. This desirable result, however, has been attained in the Rheutan boiler head, an example of which is shown in the accompanying illustrations, Fig. 1 being a detail profile view of the head and Fig. 2 a general view of a tubular boiler equipped with this head. These heads are made and furnished to the trade by the S. Freeman & Sons Mfg. Company, Racine, Wis., which has exclusive control of the device.

As the illustrations show, the boiler head area above the tubes is strengthened to resist internal pressure by being dished out. The remainder of the head is stayed as usual by the tubes, but in this case receives strong additional support from the angle bend under the dish of the top segment. The dish is pressed while at a cherry heat with dies in a powerful hydraulic press.

The desirability of eliminating head braces is ap-

To measure any movement of the head that might occur from pressure, trammel plates were cut from sheet iron to span the entire head, clearing the dish when the ends rested against the head ends of the shell plates. Any movement of the head could thus be observed at the center of the trammel independently of elongation of the shell which might take place. Measurements were taken while the pressure was being applied, but no movement was perceptible up to 315 lb. per square inch, which was the limit of the pressure test given. This being the extent of the elastic limit of the steel in the boiler, it was not deemed advisable to exceed it. Although under the highest pressure reached an elongation of the shell of 1-32 in. on each end was observed, there was no perceptible or measurable movement of the head. Considering the severity of the test, the result seems to furnish ample proof of the strength of this design to safely resist the highest working boiler pressure for which tubular boilers are designed, without the added support of braces.

Its use, when sanctioned by the principal boiler insurance companies and governing bodies, will greatly simplify the problems involved in head bracing, which at the present time, because of lack of uniformity in the

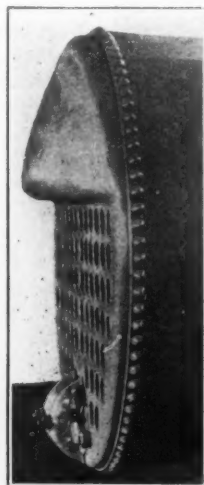


Fig. 1.

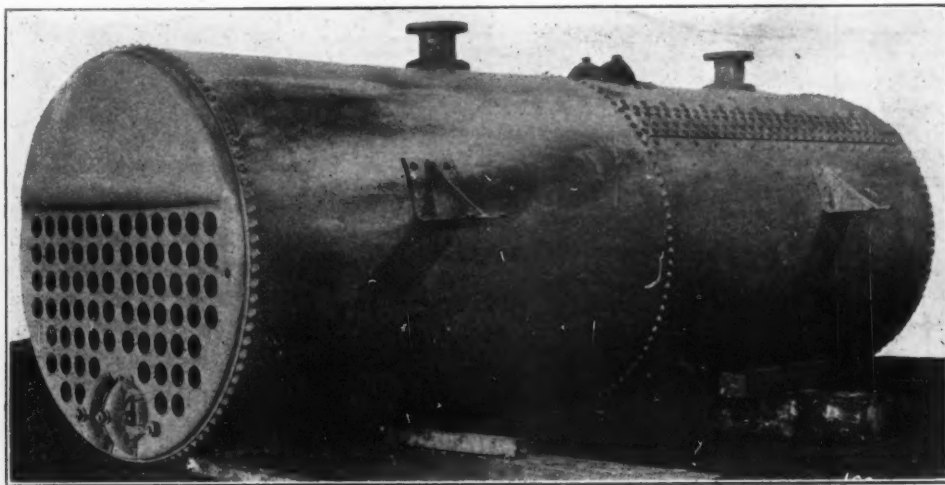


Fig. 2.

A Tubular Boiler Equipped with the Rheutan Boiler Head Made by the S. Freeman & Sons Mfg. Company, Racine, Wis.

parent. Besides the added cost in construction, their maintenance in sound condition is always expensive. Breakages also are more or less common and can only be detected by an internal examination of the boiler. Even then such defects often escape discovery, and the head sometimes becomes dangerously weakened without its being known. The cleaning of boilers is always hampered by the presence of the many braces required to sustain flat heads, and since safety and economy in the use of boilers depend in a large measure upon clean interior surfaces, the importance of clear space over the flues is readily appreciated. In a boiler 72 in. in diameter, 22 braces are usually required for each head, which necessitates the punching of 44 rivet holes in the body of the shell, weakening it to that extent.

To determine the strength and efficiency of the Rheutan head a test was recently made in the shops of the S. Freeman & Sons Mfg. Company, at which a number of prominent engineers, inspectors and boiler makers were present, including James L. Foord, chief inspector Hartford Steam Boiler Inspection & Insurance Company; A. Bement, Granville Kimball, and others. A boiler 72 in. in diameter, 18 ft. long, made of 7-16-in. flange steel, having a tensile strength of 60,000 lb., fitted with these heads, was tested. The longitudinal seams of the boiler were of the triple riveted double butt type, designed for an efficiency of 86 per cent. The heads were made of 9-16-in. flange steel, 60,000 lb. tensile strength, and were riveted to the shell with joints that figured an efficiency of 86 per cent.

rules and formulæ applying thereto are complicated and subject to more or less arbitrary methods of solution.

Chrome steel drop forgings are used to a considerable extent abroad, in automobile parts. Their high resilience makes them almost necessary for certain parts, even though they are expensive and difficult to machine. Their appearance indicates that they are formed in cast dies, for while their dimensions are fairly accurate, they do not have the smooth finish of softer work struck with machined dies. Experiments with chrome steel in this country, using the best hardened machined dies have resulted in the rapid destruction of the dies. The German manufacturer makes a pattern from the drawing, and from this pattern casts steel dies of a special composition. The business of making these dies involves a high degree of skill in the making of steel castings, a considerable knowledge of the possibilities of the various compositions of steel, and requires a complete foundry apparatus.

Robert W. Hunt & Co., general offices 1121 Rookery Building, Chicago, have been given the inspection of the material for the Southern Pacific Company's rifled pipe line. This embraces 256 miles of 8 in. rifled pipe, which is being manufactured at the Lorain plant of the National Tube Company; the machinery for 24 pumping stations, covering 46 duplicate pumps, to be manufactured by the Janesville Iron Works, Hazleton, Pa., and 72 boilers to be furnished by the Edgemoor Iron Company, Edgemoor, Del.

An Interesting Billet Conveyor.

The billet conveyor recently installed at the Conshohocken, Pa., mill of the Alan Wood Iron & Steel Company is an example of the adaptability of such apparatus to the exigencies of restricted space and unusual or special location. The conditions at the Wood plant require that the billets be taken direct from the shear to trucks running on tracks at its rear. This necessitated building the conveyor directly into the shear and constructing it so that it could be erected without interfering with the surrounding framework. At the same time provision had

under side to facilitate sliding along the T-rail tracks forming part of the supporting structure. This construction, besides providing a rugged support for the conveyor, offers an effective resistance to the blows from the plates as they fall from the shear. Angle iron guides serve as tracks for the rollers of the chain, and the return run of the conveyor is made over idler wheels. Deflecting plates assist the delivery of the billets to and from the conveyor. The steel ribbed deflecting plate at the head is shown in Fig. 1.

The machine is driven through Ley bushed chain, a type particularly adapted to severe service and especially

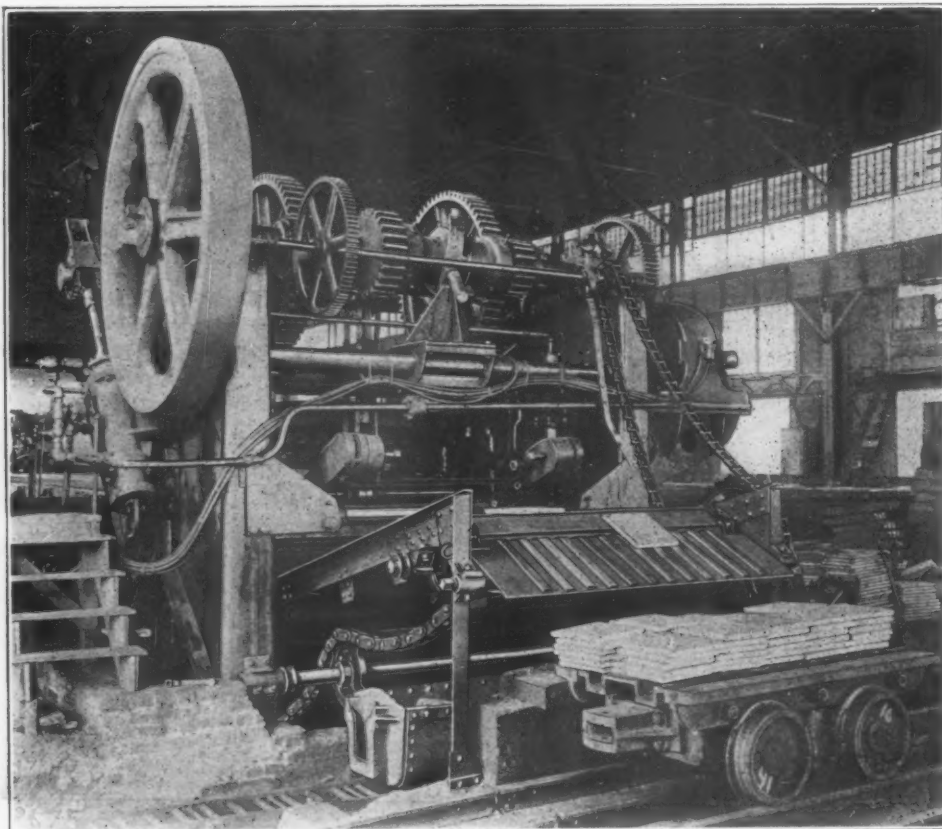


Fig. 1.—A Billet Conveyor Serving a Shear, Designed and Built by the Link-Belt Company.

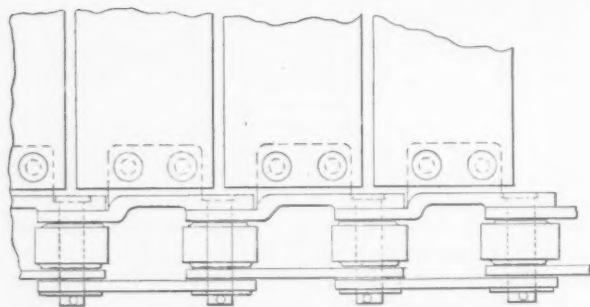


Fig. 2.—Detail of the Apron Connection to the Chain.

to be made for sufficient clearance when the conveyor is in permanent position. This was accomplished by making the lower or foot end of the conveyor pivotal, so that the discharge or head end could be swung up into place and the vertical supports fastened to it.

The illustration Fig. 1 shows the machine as it delivers the billets to the trucks. In its working position the conveyor assumes an angle of 15 degrees with the horizontal and covers a length of 11 ft. 6 in. from the center of the head to the center of the foot wheels, while the width of the apron plates is 6 ft. 1½ in.

In its general make up the conveyor does not differ materially from other machines used for similar purposes. The plates or aprons are securely fastened at each end to steel strap roller chain, as shown in the detail, Fig. 2, and are reinforced by wearing plates on the

useful where dust or dirt is present. In detail the chain consists of malleable iron side bars, or frames, held together by steel pins, which are reinforced and protected by case hardened bushings. The design of the link is such that the pins or bushings may be easily renewed when they become badly worn.

Machines of the type described, built by the Link Belt Company, Nicetown, Philadelphia, Pa., and known as continuous apron conveyors, are employed at a number of prominent mills in other sections of the country, including the Union Steel Works, Donora, Pa.; the Fowler Rolling Mills, Chicago, Ill., and the Union Iron & Steel Company's hoop mill, Youngstown, Ohio.

An English electrically driven pumping station delivers from two 3,000,000-gal. reservoirs at the foot of a hill to an iron works at a higher elevation. The three three-throw pumps are driven by ropes from direct current 500-volt motors of 120 hp. each, two to each pump. Two 12-pole generators of 370 kw. each are driven each by two 250-hp. engines, direct connected. Steam is furnished from boilers fired by spare gas from the furnaces. Each of the pumps is constructed with three rams, 18-in. diameter and 20-in. stroke. At 26 rev. per min. they deliver 1500 gal. under a head of 300 ft. To provide for easy removal of the armatures the motor pulleys are placed on an independent shaft, attached to the motor shaft through a coupling.

The Lackawanna Steamship Company's new 440 ft. steel freighter Hemlock was launched at Bay City, Mich., July 13.

The Uniform Bill of Lading

Proposed by the Interstate Commerce Commission.

The Interstate Commerce Commission is taking steps to secure the adoption by all the railroads of the new uniform bill of lading, which was submitted to the commission on June 14 last by a joint committee representing the carriers in official classification territory and various organizations of shippers. An order or notice has been issued by the commission calling upon all the roads in the United States to show cause why they should not adopt this form, and they are given until September 15 to reply. It is expected that a hearing will be given by the commission in October, after which an order may be issued which will lead to the universal adoption of the new form.

The proposed uniform bill of lading is a revision of the form adopted in 1904 by the carriers east of Chicago, in official classification territory. Vigorous protests were made by shippers at that time against the liability clause, and the requirement that shippers must pay 20 per cent. higher rates, unless they accepted it. The commission held a hearing in Chicago, as the result of which the objectionable clauses were practically suspended by the roads, although the old form is still in use, and is legally in effect as a part of the official classification which is filed with the commission. In March, 1905, a joint committee of shippers and representatives of the roads was appointed to prepare a new document that would be mutually satisfactory, and after numerous conferences, extending over two years, the matter has been settled harmoniously.

From the standpoint of the shippers the new uniform bill of lading is a very satisfactory document. It gives the shipper better protection than any bill of lading that has ever been used by American roads, defining the rights of shipper or consignee so clearly that it will no doubt save three-fourths of the trouble that has arisen heretofore. In the old form, which is now in use, the carriers practically took away from the shipper his common law rights to recover for loss or damage in transit. The liability of the road was so restricted by its terms that there are few cases where the shipper could recover in court.

Under the common law a common carrier is an insurer against everything except acts of God or the public enemy. In the new bill of lading the acts of the Government are included among the things for which the carrier shall not be held responsible. The carrier will not be liable for loss, damage or delay "caused by act of God, the public enemy, quarantine, the authority of law or the act or default of the shipper or owner," or by strikes or riots, or resulting from a defect in the property carried, and the road will be liable only for negligence while goods are stopped in transit on the order or request of the shipper. Responsibility as carrier continues 48 hr., exclusive of Sundays and legal holidays, after notice of arrival at destination has been duly sent or given to consignee, after which the carrier is liable as warehouseman only. When property is carried on open cars the carrier is liable only for fire or negligence.

The Burden of Proof on the Carrier.

An extremely important point in the new document, which will save shippers or consignees a vast amount of trouble and "shaving" of just claims, is that the burden of proof is put upon the carrier to show that it has not been negligent where there has been loss or damage. Heretofore in practically all the forms of bills of lading that have been in use the burden of proof has been on the shipper, and there are many cases where it is impossible for the shipper to prove negligence on the part of the carrier. Under the new bill of lading the shipper or consignee will only have to prove the actual loss or damage, and in those cases where, under the old forms, the shipper would have to prove that the carrier was negligent, the carrier will have to prove that it was not negligent. This will save trouble for the shippers by de-

fining their rights clearly and placing the burden on the party who is best able to bear it. The railroad always has full records of the movement of a shipment, while the shipper has no such records. This feature is characteristic of the new bill of lading in defining and safeguarding the position of the shipper so as to facilitate settlement of claims. Heretofore bills of lading have only been clear and specific in defining the rights of the carrier.

The Value of the Goods Determined.

Another very important point is that the *bona fide* invoice price shall be considered the value of the goods as the basis for settling loss or damage, and if freight is prepaid it shall be added to the invoice price. Heretofore the only basis for settlement has been the "market value," which has often been difficult to determine, and the shipper has generally had to make concessions, which meant loss to him. Under the old form the consignee was required to present claims within 30 days, but the new document allows 60 days.

The liability of the initial carrier appears to be a sore point with the railroads. The Hepburn act makes the initial carrier liable for loss or damage on connecting lines, and the roads are disposed to contest this in court as soon as some shipper gives them the opportunity. For the present they "accept the situation" in the new bill of lading by the clause: "Nothing herein contained, however, shall be construed as exempting the initial carrier from the liability, if any, imposed upon it by law for loss, damage or injury not occurring on its own line or its portion of the through route, or occurring after said property has been delivered to the next carrier."

It may be well to clear up a little misapprehension in the minds of many shippers, which has been magnified by the claim agents of some of the roads. The initial carrier clause of the Hepburn act does not cut off the consignee from his rights. He can demand settlement from the delivering road, and either consignee or shipper can settle directly with any intermediate road which they know to be responsible for loss or damage. The Hepburn act merely gives the shipper the option, if he wants to exercise it, of holding the initial carrier responsible for the entire route.

Excepting on questions of liability the new uniform bill of lading follows the phraseology of the old form which is now in use in official classification territory. The contract for carriage, on the face, is practically the same, with an addition. Section 9 of the old bill has been incorporated in the face of the new document, defining "order" bills of lading, and the clause is added as a new feature: "Inspection will not be permitted on order bills of lading, unless permission is indorsed on the original bill of lading or given in writing by the shipper."

The Sections in Detail.

Sections 1, 2 and 3 cover in detail questions of liability of the carrier and the rights of the shipper for loss, damage or injury. Section 3 contains the diversion and "reasonable dispatch" clauses, which appear in section 2 of the old form. The carrier is not allowed to change the routing of a shipment, except in case of "physical" necessity. "No carrier is bound to transport said property by any particular train or vessel, or in time for any particular market or otherwise than with reasonable dispatch, unless by special agreement indorsed hereon." On the latter point the old clause read, "or otherwise than with as reasonable dispatch as its general business will permit."

Section 4 covers cooerage and baling, which are not of interest to the iron trade.

Section 5 defines liability of carrier at destination, making the road liable as carrier until 48 hr. after notice of arrival has been duly sent or given. In the old form liability as carrier ceased after 24 hr., and the carrier was not bound to give notice of arrival. On carload shipments demurrage is made a lien on the goods, and may begin 48 hr. after arrival. A new feature, not found in the old form, permits the roads to add demurrage, as a lien, if the car is held by the shipper more than 48 hr. for loading. This is in line with the general policy which the roads are working out to make 48 hr. the universal

limit for loading or unloading, but in the new bill of lading the condition is added: "Nothing in this section shall be construed as setting aside any local law or rule affecting car service or storage." Shipments are at the owner's risk on private sidings, or where there is no station, the same as in the old form.

Section 6, covering unclassified articles or documents of unusual value, remains practically unchanged.

Section 7, covering explosives or dangerous goods, is unchanged.

Section 8 of the old form, covering alterations, additions or erasures, appears as section 10 of the new, and section 9 of the old, defining "order" bills of lading, appears in the face of the new document.

The stipulation regarding the rate, weights and charges in section 10 of the old form is omitted in section 8 of the new, which requires the shipper, owner or consignee to pay the freight and all other "lawful" charges before delivery.

The water route clause appearing as section 11 in the old and 9 in the new form, is practically unchanged, except that if the carrier changes the routing to a water line it is liable as a railroad. A definition of water carriage is added, which makes the liability the same as in carriage by rail for lighterage across rivers, or in lake or other harbors.

The new uniform bill of lading reflects great credit on the joint committee of shippers and railroad men who have worked so patiently in perfecting it. The carriers have shown a disposition to be fair and generous, and particular credit is due to Levy Mayer of Chicago, general counsel for the shipping interests, who has advised and aided them on all legal and diplomatic questions.

The New Official Classification

Official classification No. 30, which has been filed with the Interstate Commerce Commission and will take effect August 1, contains many important changes of interest to the iron trade. There has been a general increase in the minimum weights required in carload shipments. Practically all iron products subject to class rates, which load compactly in a car, have been raised to a minimum of 36,000 lb. Agricultural implements have been raised from 20,000 to 24,000 lb., and these and other bulky products which are carried at less than 36,000 lb. are generally subject to rule 27. This rule fixes minimum weights on a sliding scale, based on the standard 36 ft. 6 in. car. Where the minimum is 24,000 lb. for a car of this standard size or smaller it rises to 60,000 lb. for a 50 ft. 6 in. car.

Only a few changes have been made in the classification of iron or steel products, as published in the official classification, but in a roundabout way the roads in official classification territory have made a general advance of about half a class in something like 170 articles which appear in the "special iron list." These articles are classified at fourth class in less than carloads and fifth class in carloads in the official classification, but the roads for several years had "exception" tariffs in force which made the rates 10 per cent. above fifth class in less than carloads and 10 per cent. above sixth class in carloads. These "exception" tariffs have been canceled by the roads, so that all iron and steel products taking class rates are now subject to the regular official classification. There has also been a general advance in pig iron rates, covering the articles carried on pig iron commodity tariffs.

A table of road resistances in pounds per ton (of 2240 lb.), has recently been published in England. The figure given railroads is 10. Asphalt has second place with 15, 22 and 29 lb. for good, medium and poor, respectively. Tramways and wood paving are each placed at 30. The best macadam is from 43 to 46; ordinary quality from 50 to 60; and soft macadam as high as 97 lb. per ton. The best gravel and cobbles are given as 57 and 60 respectively, while ordinary and very bad cobbles are placed at 130 and 240 lb. Dry, hard clay is said to offer a resistance of 100 lb. per ton; a sand road, 360 lb.; and loose sand, no less than 560 lb., or 25 per cent. of the weight to be moved over it.

United States Mineral Production in 1907.

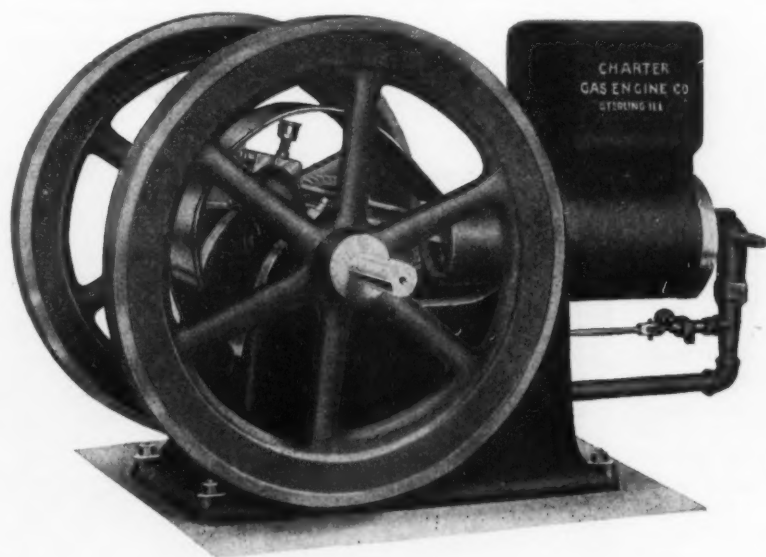
The United States Geological Survey announces preliminary statistics of production of minerals in 1907, part of which is as follows:

	Quantity.	Value.
Aluminum (consumption), pounds.....	14,910,000	\$4,262,286
Asbestos, net tons.....	1,695	28,565
Bauxite, gross tons:		
Alabama and Georgia.....	25,065	
Arkansas.....	50,267	368,311
Total.....	75,332	
Cement, barrels.....	51,000,445	\$55,302,277
Portland cement, barrels:		
Alabama, Georgia, Virginia, West		
Virginia.....	1,172,041	\$1,432,023
California.....	1,310,435	2,110,294
Colorado, Utah, Texas, South Dakota		
and Arizona.....	1,146,396	2,034,382
Illinois.....	1,858,403	2,461,494
Indiana.....	3,951,836	4,964,855
Kansas.....	3,020,862	3,908,708
Michigan.....	3,747,525	4,814,965
Missouri and Kentucky.....	3,350,000	3,260,000
New Jersey.....	4,423,648	4,445,364
New York.....	2,414,362	2,725,744
Ohio.....	1,422,901	1,709,918
Pennsylvania.....	18,645,015	18,598,439
Totals.....	46,463,424	\$52,446,186
Natural cement, barrels:		
Georgia.....	180,500	\$98,075
Illinois.....	365,843	118,221
Indiana.....	600,000	240,000
Kansas and Texas.....	238,311	129,781
Kentucky, Ohio and Virginia.....	170,194	95,539
Maryland.....	63,350	32,675
New York.....	1,515,866	1,055,785
Pennsylvania.....	744,403	560,534
Wisconsin, No. Dakota and Minnesota	177,330	92,560
Totals.....	4,055,797	\$2,423,170
Puzzolan or slag cement, barrels.....	481,224	\$412,921
Slate:		
Arkansas.....		\$5,000
California.....		80,000
Georgia.....		5,000
Maine.....		238,681
Maryland.....		130,969
New York.....		72,360
Pennsylvania.....		3,522,149
Vermont.....		1,441,330
Virginia.....		172,857
Total.....		\$5,668,346
Mica, sheet, pounds.....	1,423,100	\$252,248
Mica, scrap, net tons.....	1,489	22,742
Total.....		\$274,990
North Carolina.....		\$217,695
New Hampshire.....		9,884
Colorado, Connecticut, Idaho, New		
Mexico, South Dakota and Virginia		47,410
Total.....		\$274,990
Feldspar, net tons:		
Maine and Minnesota.....	13,906	\$110,258
New York and Connecticut.....	30,054	124,536
Maryland.....	10,229	34,507
Pennsylvania.....	18,467	132,230
Totals.....	72,656	\$401,531
Quartz (flint), net tons:		
Connecticut and New York.....	11,704	\$71,375
Pennsylvania, Maryland and New		
Jersey.....	22,876	158,159
Virginia and North Carolina.....	32,117	13,478
Totals.....	66,697	\$243,012
Grindstones:		
Ohio.....		\$644,720
Michigan, Montana, Missouri and		
Wyoming.....		78,870
West Virginia.....		21,304
Total.....		\$744,894
Whetstones and ollstones:		
Michigan, Vermont, New Hampshire		
and Arkansas.....		\$198,222
Indiana.....		23,806
Ohio.....		46,042
Total.....		\$268,070
Nickel, cobalt, molybdenum, titanium,		
uranium, vanadium and tantalum.....		\$64,660
Tungsten.....		393,667
Total.....		\$458,327
Bromine, pounds.....	1,283,250	\$165,204

A New Charter Gasoline Engine.

An entirely self-contained gasoline engine was the objective when the Charter Gas Engine Company, Sterling, Ill., designed the open jacket cylinder type engine shown in the accompanying illustration. In its general mechanical details the engine does not differ from the regular types heretofore made by this company. Its distinctive feature is an open water jacket combined with the cylinder in one piece. The need of a separate water tank, with its outside piping connection, is thus obviated. The chamber above the cylinder holds water enough to keep the cylinder cool, and for short runs the supply needs no replenishing. In continuous service, however, waste through evaporation makes it necessary to refill the jacket at intervals, which is done by pouring water into the reservoir. Provision is made for draining off the water quickly in cold weather to avoid danger of breakage by freezing.

Gasoline is supplied from a receptacle provided in the base of the engine, which serves the purpose of a gasoline tank and completes the self-contained features aimed at in this design. On account of its compactness the engine occupies a minimum of space, and when mounted on a small truck is easily portable. All engines made



The Open Jacket Gasoline Engine Built by the Charter Gas Engine Company, Sterling, Ill.

by the company, up to and including 20 hp., can be furnished with the open water jacket cylinder and gasoline tank in the base if desired.

The Source of Radium.—Doubts have been cast on the generally accepted theory that radium is a decomposition product of uranium, says *Nature*. A recent investigator showed that, starting with a solution of uranium nitrate carefully purified by repeated crystallization, the amount of radium formed in 18 months was less than 1-2000 of the amount which the disintegration theory called for. In a recent experiment upon the growth of radium from actinium, this same scientist decomposed a kilogram (2.2046 lb.) of carnotite ore, containing about 20 per cent. of uranium, in an excess of hydrochloric acid. This solution was then so treated as to separate the actinium from the other constituents. It was secured in the form of a chloride, which was then sealed in a glass tube. After two months the gases from the tubes were placed in an electroscope and the activity of the emanation determined. The tube was then resealed and allowed to remain for several months longer. The emanation at the end of this time was found to indicate an activity corresponding to three times the former amount of radium. From this rate of increase it is computed that the half period for the evolution of the emanation would be about 3100 years. Since the amount of actinium in a mineral is apparently always proportional to the amounts of uranium and radium present, it is

thought that actinium may prove to be the looked for intermediate product.

Flywheels and Motor Driven Tools.

The motor driving of machine tools occasionally involves numerous electrical and mechanical problems peculiar to special conditions of control, speed of cutting and economy of power consumption. The relative advantages of individual and group driving, the reduction of losses in belts and shafting, and the selection of the best type of motors for a given work have been carefully analyzed during the past five years. The function of a flywheel in the drive of heavy punches, shears, presses and similar tools where the maximum demand greatly exceeds the average power consumption, has lately been given more attention, and experience proves that considerable power may be saved with a properly proportioned flywheel.

Experiments on a motor driven planer with and without a flywheel have recently been made by Howard P. Fairfield of the Worcester Polytechnic Institute staff. The ordinary metal planer requires excessive energy at the moment of reversal, which, while only momentary, may amount to five or six times the power consumption while cutting. This is due to the means for reciprocating the table—shifting belts and tight and loose pulleys. The belts are shifted practically instantaneously to give a sharp and precise reverse of the table. To be easy to shift, the belts must be narrow, and to give the necessary power they are run at a high linear speed. Consequently the driving pulleys run at a high rim speed, and it is the shock of their sudden reversal that calls for so much energy.

A series of tests lasting several days was made with a 10-hp. induction motor, direct connected to a 36 x 36 in. x 10 ft. planer, to determine the effect upon the power consumed by changing the length of the stroke and by using a flywheel in the drive. The flywheel was applied where it would have the highest speed—on the motor shaft—so that it might be as small and light as possible and still prevent the shock of reversal from materially reducing the motor speed. On a planer such as tested, the work will usually require from one-half to full stroke

and a series of tests was run at each of these two limits. Comparison was made by surfacing the same area first with a long stroke and definite number of reversals, and then with half that stroke and twice as many reversals. At one-half stroke, 5 ft., the full width of the table was traversed, representing 2160 sq. in. of planed surface, and at full stroke, one-half the table width corresponded to an equivalent area.

With no flywheel the current consumption for the 5-ft. stroke was 1.85 kw.-hr.; and for the 10-ft. stroke, 1.63 kw.-hr.; with the flywheel the 5-ft. stroke required 1.3 kw.-hr., and the 10-ft. stroke 1.24 kw.-hr. In other words, without the flywheel the long stroke required 12 per cent. less power than the short stroke; with the flywheel, the short stroke was performed with 29.5 per cent. less power, and the long stroke with 32.9 per cent. less. Assuming the cost of current to be 5 cents per kilowatt-hour, the long stroke without flywheel saved 1.1 cents per hour; the short stroke with flywheel 2.7 cents, and the long stroke with flywheel 3 cents. The flywheel was responsible for the greatest saving in power, and there was a lesser saving gained by grouping the work for a maximum length of stroke. Another advantage in the use of the flywheel was the faster average rate of production due to the absence of slowdowns and tardy reversals. In some shops this would outweigh the power saving in importance. The tests incidentally displayed the value of electric drive when investigating machine performance; with belt drive from a line shaft it would have been difficult to measure the power consumed.

The World's Warships.

Among warships built or under construction on July 1, 1907, no less than 49 are of 16,000 tons displacement or upward and 137 others of upward of 12,000 tons. This compares with a total of 139 upward of 12,000 tons in 1903 and only 77 in 1899. Of the largest size, England possesses the greatest number, with 17, followed by the United States with 10, France and Japan with 6 each and Germany with 5. Of those between 12,000 and 16,000 tons, England has a still greater lead, with 58 against 20 for the United States, 15 for France, 12 each for Italy and Japan, 11 for Germany and 9 for Russia.

Comparisons of Speed.

When it comes to a question of speed—excluding all forms of torpedo craft—we find that the total number capable of 24 knots or higher on July 1, 1907, was 24, with 111 others from 22 to 24 knots and 163 more from 20 to 22 knots. This makes a total of 298 of 20 knots or more, compared with 256 in 1903 and 179 in 1899. The advance is most marked among the vessels of the highest speeds, the total above 22 knots being 135 at present, as compared with 92 in 1903 and only 38 in 1899. With her immense navy to draw from, England leads in number of swift vessels, as well as in large ones. She has 14 ships of 24 knots or more, 32 of 22 knots and 50 of 20 knots. The United States has 3 of 24 knots, 15 of 22 and 10 of 20 knots. Germany has, respectively, 2, 19 and 16. Japan has 1, 8 and 18. Italy has 1, 6 and 11. No other large power has ships of over 24 knots. France has 11 of 22 knots and 26 of 20 knots. Russia has 7 of 22 knots and only 4 between 20 and 22 knots.

Considering the speeds of all the navies, minor as well as major, and omitting all torpedo craft, the premier position is held by Chile, with 20.74 knots, England being second with 20.14 knots. The others in order are Brazil, 19.7 knots; Japan, 19.65 knots; Italy, 19.47 knots; Austria, 19.22 knots; France, 18.94 knots; United States, 18.9 knots; Germany, 18.76 knots; China, 18.66 knots; Argentina, 18.61 knots, and Russia, 18.06 knots. The inclusion of so many of the smaller naval powers high up in this list is due in very large measure to the fact that most of them possess fleets made up largely of cruisers, which are naturally of greater speed than the heavy battleships of the greater powers.

Comparisons of Total Tonnage.

Excluding torpedo craft and obsolete and worn out vessels, the navies of the world included, on July 1, 1907, in vessels built and building, 963 ships of a total displacement of 6,009,448 tons, or an average of 6332. The total number of guns of primary and secondary batteries, including torpedo tubes, was 29,527, or an average of about 31 per ship. The average speed of the ships was 18.94 knots.

Great Britain, as usual, accounts for the largest force, with 197 ships of 1,841,730 tons, or an average of 9349. The average speed of these ships is 20.14 knots. The total number of guns is 7403, or an average of 38 per ship. France comes second, with 112 ships of 812,345 tons, or an average of 7231. The speed averages 18.94 knots. There are 3488 guns, or an average of 31. The third place is held by the United States, with 110 ships, of 799,028 tons, or an average of 7264. The average speed of the American ships is 18.9 knots. The guns number 3924, or an average of 36. Germany has 120 ships, aggregating 707,870 tons, or an average of 5899, with an average speed of 18.76 knots and a total battery of 3811 guns, or an average of 32.

No other power has as much as 500,000 tons in the navy, Japan coming closest to this mark, with 63 ships and 486,872 tons, or an average of 7728, and an average speed of 19.65 knots. The guns number 2267, or an average of 36. Russia and Italy are close rivals in tonnage. Russia has 56 ships, of 358,296 tons, or an average of 6398 and a speed of 18.06 knots. They carry 1854 guns, or an average of 33. Italy has 57 ships, of 357,491 tons, or an average of 6272, and a speed of 19.47 knots. The guns number 1976, or an average of 35. The only other navy of real importance is that of Austria, which

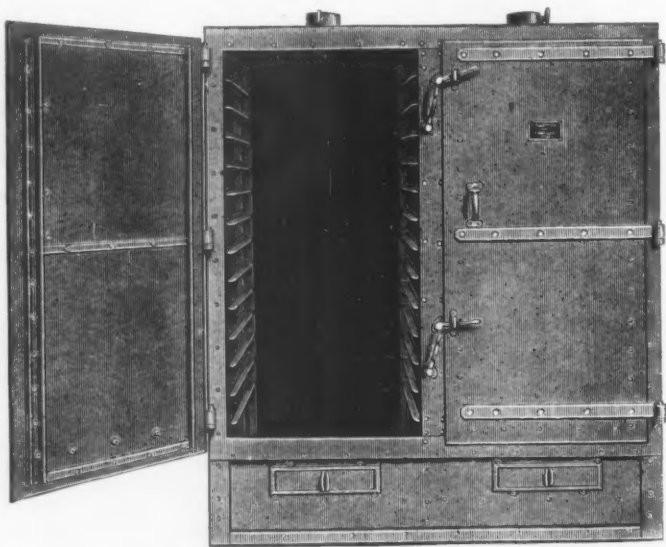
includes 29 ships, of 128,865 tons, or an average of 4444, and a speed of 19.22 knots. The guns number 770, or an average of 27 per ship.

The Anglo-Saxons are thus seen to possess 307 ships, of 2,640,758 tons, or an average of 8602, with a mean speed of 19.77 knots and a total battery of 11,327 guns, or an average of 37. This is ahead of any conceivable outside political combination, for France, Germany, Russia, Italy, Austria and Spain combined have but 396 ships, of 2,430,696 tons, or an average of 6142, and a mean speed of 18.81 knots. Their guns number 12,319, or an average of 31.

S. G. K.

The Steiner Japanning and Drying Ovens.

The fault of most ovens built of sheet metal is that they are wasteful of heat by radiation. The ovens built by Emil E. Steiner, 50 Perry street, Newark, N. J., are particularly designed to overcome this, their walls being made of two sheets of steel with an interlining of 1, 1½ or 2 in. of air-cell asbestos. They are particularly recommended for baking, drying, lacquering, core drying, &c., and also for japanning and enameling. Any size required may be had. The smaller ones are built and shipped ready for use; the larger sizes are built in sections so constructed that skilled labor is not required to erect them. The frame of the oven is made of bar and angle iron and the doors are made of plate iron supported by a



A Sheet Steel Asbestos Lagged Drying Oven Built by E. E. Steiner, Newark, N. J.

wrought iron frame, making in all a very substantial construction.

The illustration shows the type of oven built with racks on the sides for shelves, these racks being adjustable to suit various requirements. This oven also has a panel underneath the doors with slides through which access is had to the burners for lighting them; the openings also help in cooling the ovens after the burners have been extinguished. In other cases the doors proper extend clear to the bottom of the oven, which permits trucks to be run directly into them.

Ordinarily the ovens are made to be heated with gas burners, but they can also be designed to use steam pipe coils, and some smaller sizes coal fires. Various types of gas burners are provided, according to the intended use of the oven. Special ovens are built for treating work which requires indirect heat, in which case gas blast radiators are supplied, which are especially adaptable for drying materials containing a large percentage of moisture or for baking materials which emit inflammable gases. The ovens are usually heated by steam for enameling work. The company also furnishes blowers for supplying air for operating gas blast furnaces.

The Cleveland Pneumatic Valve Grinder.

So far as is known the only machine for grinding metal valves that is operated by compressed air is the one illustrated and recently put on the market by the Cleveland Pneumatic Tool Company, Cleveland, Ohio. It is a small portable machine, applicable to the grinding of valves for pumps, air compressors, gas and gasoline



Fig. 1.—The Oscillating Valve Grinder Made by the Cleveland Pneumatic Tool Company.

engines, and angle, check or other metal valves. The general external appearance is shown in Fig. 1, and Fig. 2, a sectional view, well brings out the construction. Two single acting air cylinders alternately propel their pistons, which are connected by a rack meshing a pinion on the spindle that carries the chuck for rotating the valve being ground. In operation a rapid oscillating

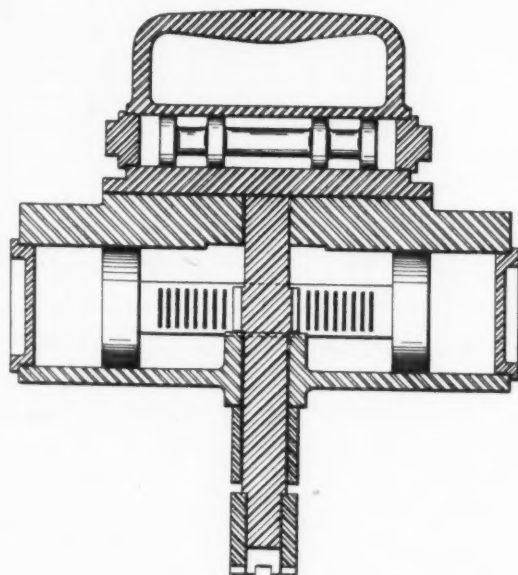


Fig. 2.—Sectional View of the Cleveland Oscillating Valve Grinder.

movement is given to the valve, which prevents ring grooves and cutting of surfaces and produces an accurately ground and smooth valve seat.

When desired a rigging may be used to support the grinder, consisting of a bar attached to the body of the device near the handle and pivoted at one end to a sta-

tionary support. By raising and lowering the other end the grinder may be presented to its work and the pressure exerted that may be necessary to grind the valve to a good seat. It is claimed that the machine will do the work of six men grinding by hand.

The size of the grinder is 9 x 10½ in. and its weight is 14½ lb. Air connection is made through ¼-in. hose nipples, and a chuck can be made to fit any valve.

Steam and Electric Railroad Operation Compared.

In a paper before the American Institute of Electrical Engineers, figures are given of the comparative percentage costs of operation of railroads by steam and electricity. Allotting the 100 per cent. basis to steam roads, 92.028 per cent. is the cost for electric roads, thus indicating a saving of about 8 per cent. The figures are given under four separate headings:

	Steam.	Electric.
Maintenance of way and structures.....	21.003	32.354
Maintenance of equipment.....	19.524	12.287
Conducting transportation.....	55.540	43.454
General expenses (general office, &c.).....	3.933	3.933

A great many of the separate items of expenditure under the main headings are the same for both types, and all items under the last heading are the same. The largest single item under the first heading is repairs of roadway, which is the same (10.818) for each. The main points of difference under the several headings are given:

	Heading.	Steam.	Electric.
Renewals of rails.....	W. & S.	1.439	5.000
Renewals of ties.....	W. & S.	2.728	5.000
Repairs and renewals of bridges and culverts.....	W. & S.	2.466	5.000
Repairs and renewals of buildings, &c.....	W. & S.	2.366	1.300
Repairs and renewals of track bonding.....	W. & S.	0.800
Repairs and renewals of overhead construction.....	W. & S.	3.250
Repairs and renewals of locomotives.....	M. of E.	7.509	2.253
Repairs and renewals of freight cars.....	M. of E.	7.657	6.000
Engine and roundhouse men.....	C. T.	9.451	4.710
Fuel for locomotives.....	C. T.	11.292	5.553
Water supply for locomotives.....	C. T.	0.634
Oil, Tallow and waste for locomotives.....	C. T.	0.381	0.250

The largest items not above mentioned, where there is an agreement between the two figures, include repairs and renewals of passenger cars, 2,080; superintendence, 1,752; train service, 6,739; switchmen, flagmen and watchmen, 4,173; station service, 6,697, and salaries of general officers, clerks and attendants, 2,166. The points of difference, as tabulated above, are based upon the difference in mode of operation and require no comment.

A Berlin Metal Exchange.

The "Aeltesten der Kaufmannschaft" of Berlin, composed chiefly of the business people operating on the bourse, have declared in favor of organizing a metal exchange as a section of the bourse. They have addressed a communication on the subject to the Chamber of Commerce, with which the decision of the matter lies. The Chamber has also been studying the subject, but has hitherto been held back by the great difficulties in the way. One is the lack of public warehouses, and another is the absence of adequate laws upon which to base the issuing of valid warrants against deposits of metals. The Aeltesten, however, state in their communication that a large bank has agreed to undertake the function of warehousing the metals and issuing warrants. It is believed that the action of the Aeltesten will lead to the organization of a metal exchange, one strong influence being the violent fluctuations in prices on the London metal market. The Aeltesten in their communication say that this is owing to the fact that the quantity of the metals reaching England is too limited to support a strong metal exchange, and that transactions hence become too speculative. They argue that Germany, being the greatest consumer of copper, lead and zinc in Europe, the largest producer of zinc in the world, and the next largest European producer of lead after Spain, supplies the conditions necessary for a broad metal market.

The Sarco Automatic Combustion Recorder.

Given the best equipment possible in a steam plant and there still remains a chance for poor economy if the boilers are not fired so as to realize approximately perfect combustion continuously. A few years ago this all depended upon the skill of the fireman, but gradually it has come to be appreciated that something more dependable than human discretion is desirable. Various mechanical means of stoking have greatly improved the efficiency of firing and saved considerable in fuel expense. Still much depends upon the proper adjustment of these devices, and the only accurate check on hand or mechanical firing is a flue gas analysis—ordinarily so laborious as to be undertaken only very infrequently, if at all. If the percentage of carbon dioxide (CO_2), the product of perfect combustion, in the flue gases is known, there is instant indication of the right or wrong conditions in the furnace.

The automatic recorder recently introduced by the

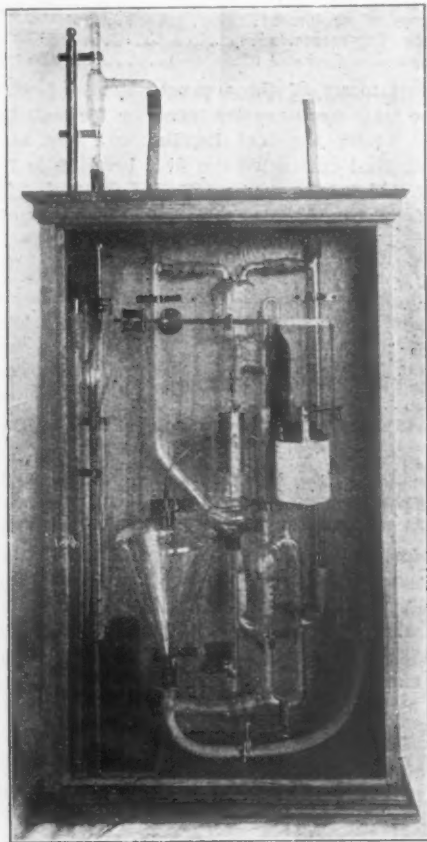


Fig. 1.—The Sarco Type B Automatic Combustion Recorder.

Sarco Fuel Saving & Engineering Company, West Street Building, New York City, is practically a mechanical chemist, for it analyzes the exit gases from boiler or other furnaces, and automatically records on a permanent diagram the percentage of carbonic acid gas (carbon dioxide) which they contain. It is not the first device of the sort that has been brought out, but it is claimed to be one of the most simple and practical, having eliminated many of the complications which made older forms objectionable.

The recorder illustrated is known as the type B, and has the advantage of cheapness and compactness. Its outside dimensions are only 2 ft. 8 in. high by 1 ft. 8 in. wide by 9½ in. deep, hence it may be accommodated in almost any boiler or furnace house. The general appearance of the recorder is shown in Fig. 1, which represents it as suspended on a wall, preferably near the boiler or furnace with which it is connected, so that the fireman may conveniently watch it and be able to take advantage of the information it affords. Distance, however, is not important to satisfactory operation, as it may if desired be placed in the office to apprise the superintendent of what is transpiring in the furnace room.

Fig. 2 is a sectional elevation of the apparatus which

best indicates its operation. The gas is obtained through a ¾ in. pipe tapped into the side flue or last combustion chamber of the boiler or furnace, and is drawn into the instrument through the inlet pipe D by a special aspirator Q, fixed to the top in the standard T. A continuous rapid passage of the gas is secured which, in average cases, renders it possible to read on the chart the effect of an alteration in the firing within a few minutes of its occurrence. A small stream of water under a head of about 2 or 3 ft. supplies the necessary power to inhale

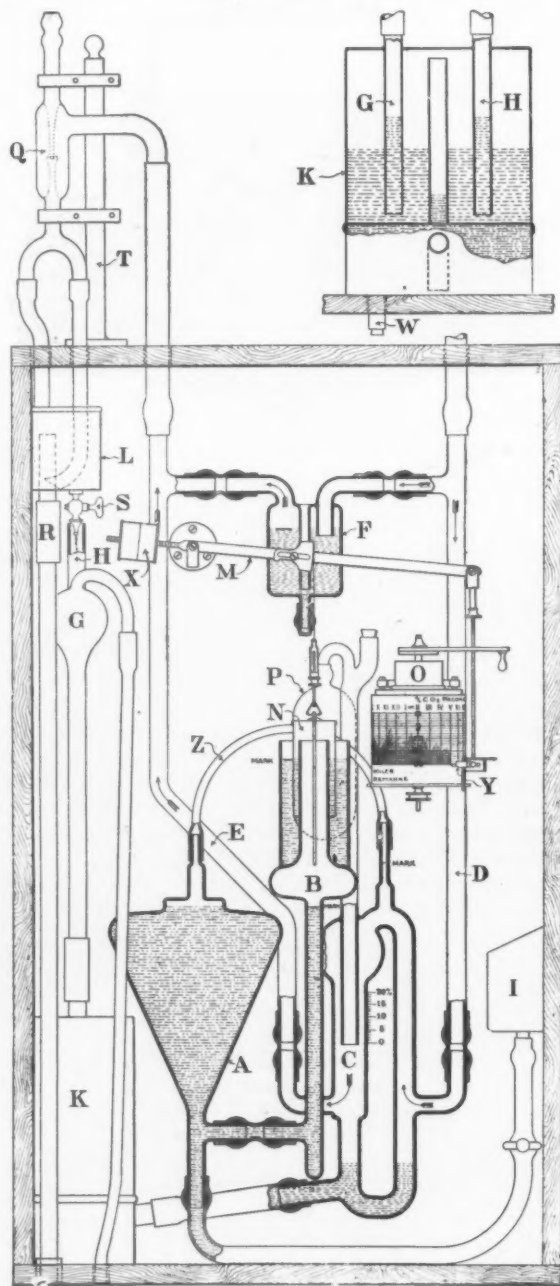


Fig. 2.—Sectional Elevation of the Combustion Recorder.

the gas. Ordinarily 6 or 8 gal. per hour, according to the speed at which the machine is operated, suffices, and the water may be used repeatedly if desirable. After actuating the ejector Q, a portion of the water flows to the small tank L, which serves as a pressure regulator and is provided with an overflow tube R. From this tank the water enters the tube H in a fine stream, adjusted by the cock S, according to the number of records that may be desired per hour, and gradually fills the vessel K. The latter is divided into upper and lower compartments connected by a tube reaching nearly to the top of the upper chamber. The water which enters this vessel through the tube H gradually fills the upper chamber and compresses the air contained in it. This pressure is transmitted to the lower compartment through the tube mentioned and here acts upon a mixture of glycerine and water (1 to 3), driving it out into the cal-

librated tube C. While this has been taking place, the aspirator Q has been drawing a continuous stream of gas through D, C and E, in the directions indicated by the arrows.

When the rising liquid in C has reached the inlet and outlet to this vessel no further gas can enter the calibrated tubes, and for the time being the aspirator will draw the gas through the seal F. Before the liquid can close the center tube in C the gas has to overcome the slight resistance offered by the elastic bag P, and is thereby forced to assume atmospheric pressure. When the liquid has sealed the lower open end of this tube exactly 100 c. cm. of flue gas is trapped in the outer vessel C and its companion tube, under atmospheric pressure. Further rise of the liquid forces the gas through the thin tube Z into vessel A, which is filled with a solution of caustic potash of 1.27 specific gravity. Upon coming into contact with the latter and the moistened sides of the vessel the gas is freed of any carbon dioxide that may be contained in it, this being rapidly and completely absorbed by the potash.

The remaining gas gradually displaces the potash solution in A, sending it up into the vessel B, which has an outer jacket filled with glycerine and supporting a float N. Through the center of this float reaches a thin tube through which the air in B is kept at atmospheric pressure. The float is suspended from the pen gear M by a silk cord and counterbalanced by the weights X. The rising liquid in B first forces a portion of the air therein out through the center tube in the float, and then raises the latter. This causes the pen lever to swing upward, carrying the pen Y with it.

The mechanism is so calibrated and adjusted that the pen will travel to the top or zero line on the chart when only atmospheric air is passing through the machine and nothing is absorbed by the potash in A. On the other hand, should any carbon dioxide be contained in the gas sample it would be absorbed by the potash in A, hence not so much of this liquid would be forced up into vessel B and the float would not cause the pen to travel up so high on the chart. The distance traveled, depending on the amount of CO₂ absorbed, the tops of the vertical lines recorded on the chart afford a continuous curve showing the percentage of CO₂ in the exit gases from the flues and a permanent diagram for 24 hours.

When the liquid in C has reached the mark on the narrow neck of that tube the whole of the 100 c. cm. has been forced in contact with the potash and one analysis is completed. At this moment the water providing the power, which simultaneously with rising in the tube H has also traveled upward in the siphon G, will have reached the top of this siphon and commenced to flow. The quantity of water flowing through the siphon is much larger than that flowing through the cock S, so that the power vessel K is rapidly emptied again. Instantly upon the releasing of the pressure in this vessel the liquid from C returns into the lower compartment and float N resumes its original position. As soon as the liquid in C has fallen below the gas inlet and outlet to this vessel the whole of the remaining gas is rapidly sucked out through E by the ejector Q.

It is to be noticed that the gas when analyzed leaves the recorder by a set of tubes entirely separate from those through which the samples are obtained, so that there is no possibility of mixing the old with the new. This means much to the sensitiveness and accuracy of the recorder. Purification of the gas, which is important, is cared for by a specially large filter of improved design, which is supplied with each recorder.

The vessel F is provided with a small center tube open to the atmosphere, and serves as an indication that the pipe line is clear, the ejector drawing air through the seal in case of stoppage.

The instrument, once erected, works entirely automatically and requires no attention beyond changing the chart and winding the clock every 24 hours, and renewing the potash solution every two to three weeks. There are no parts likely to require repair or renewal, and a permanent and automatic check is provided to test the correct adjustment and working.

Conciliation in the Anthracite Region.

On behalf of the anthracite coal operators a statement was given out at New York this week relative to the results of conciliation in the settlement of questions arising between the anthracite miners and operators. The Board of Conciliation created by the Anthracite Strike Commission of 1902 has not a single case before it to-day. The operators say that it must be assumed that if the miners have no complaints to make they are satisfied with the way they are being treated. Of the work of the Board of Conciliation the statement says:

During the four years of the commission's existence 159 differences between the coal operators and their employees have been settled. The board itself—composed of three representatives of the operators and three of the miners—has disposed of 132 of the cases, and an even division of the board has made it necessary to refer only 27 cases to an umpire. Of these appeals he sustained the complainant in only six cases. Experience gained in handling the complex questions involved has enabled the board to render its decisions with increasing promptness, and of the 159 cases presented 49 were disposed of within less than a month.

Of the grievances considered, only one was presented by the United Mine Workers of America, as a body representing all the miners. Thirteen were presented by the operators and 146 by the miners. By the board's decisions 29 cases were sustained, 115 not sustained or withdrawn, and 15 settled "through the influence of the board."

Almost every element of the miners' welfare is involved in controversies brought up for consideration. The discharge of an employee, failure of another to secure reinstatement, suspension of a contract for loading "dirty coal," requests for a half-holiday on pay day, and scores of other questions come before the board.

Questions affecting wages have been rarely brought before the board, for the reason that the Anthracite Strike Commission, after exhaustive investigation, settled upon a minimum scale of wages, which was renewed for three years by the miners and operators at the expiration, April 1, 1906, of the original arrangement. To put the miners upon a profit-sharing basis the commission further awarded that for every advance of 5 cents above \$4.50 in the wholesale selling price per ton of domestic sizes of coal at tidewater, the wages of every man about the mines should be increased 1 per cent. above the schedule.

Building Operations for the Half Year.

Building operations in the United States for the first half of 1907 show a falling off, as compared with the same period last year, the comparison being of estimated values given in the plans filed with different city departments. The most marked decrease is noted in Eastern and Central Eastern cities, those of Allegheny, Buffalo, New York, Philadelphia, Pittsburgh, Rochester, Washington and Worcester having a total of \$146,000,000, as against \$183,000,000 for the same cities in the first half of 1906. This decrease was largely brought about by the falling off of operations in Manhattan and the Bronx of \$33,000,000. In 17 cities in the Middle West a decrease of \$6,000,000 was noted, Chicago alone showing a falling off of slightly less than \$5,000,000. An increase was noted in four cities in the Southern States, and a like increase is shown in five cities on the Pacific Slope, exclusive of San Francisco. The estimated cost of building operations in 10 cities in the Eastern States in June shows a falling off of approximately 9 per cent. compared with the same month last year, practically all of the cities showing a decline. In 21 cities in the Middle West an increase of approximately 3 per cent. is noted, while a falling off is shown in eight cities. A decrease of 10 per cent. was noted in seven Southern cities. On the Pacific Coast the boom which has been in progress for several years continues.

The Central Foundry Supply Company was recently organized in Columbus, Ohio, with offices at 813 Columbus Savings and Trust Building. J. S. Ball is president; D. Mason, vice-president, and C. E. Whiton, secretary and treasurer.

Ramsay, Bowron & Perry, engineers, Birmingham, Ala., have issued the State Mine Inspectors' report of Alabama for 1906. They will furnish copies of the report for 10 cents each, to cover mailing cost.

THE IRON AGE

1855-1907.

New York, Thursday, July 18, 1907.

Entered at the New York Post Office, as Second Class Mail Matter.

DAVID WILLIAMS COMPANY,	-	-	-	-	-	PUBLISHER
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The Iron Age Index.

The index to the reading matter of Volume 79 of *The Iron Age*, for January 1 to June 30, 1907, has been compiled and printed and will be mailed to those subscribers of *The Iron Age* who will make application for it.

To relieve those who bind or file *The Iron Age* of the trouble of future applications for the semiannual index we have a special list of addresses to which the index is forwarded without further notice. Subscribers who desire their addresses entered upon that list will kindly so advise us.

Machinery Penalties and Premiums.

Some customers of machinery manufacturers and dealers are inclined to exact penalties for nondelivery on agreed dates. The practice is not general, nor is it likely ever to be. But it exists, and is the cause of some friction, for neither machinery manufacturer nor dealer is favorably disposed toward the penalty clause and its companion, the premium clause. In the past year and a half the customer has not been in a position to exact penalties. He has had to take the best delivery he could get, and his talk has not been of penalties but of premiums. The same general situation exists to-day, for demand has not fallen away to any material extent. However, there have been conjecture and discussion of an impending change in business conditions, and this has led some purchasers to be a little more insistent in dealing with sellers of machinery. Machinery manufacturers do not feel this so much as the dealers, for while some of the former are making headway in bettering their delivery sheets, even these are getting ahead very slowly, while others are unable to gain a day, so that none need make any special effort to secure new business. But the dealer's volume of business depends upon the production of others, and in his constant effort to increase his total he is now running into the penalty clause.

It is still a premium market. The demand for machine tools has shrunk comparatively little in spite of the vacation season. The general opinion seems to be, based upon recent inquiries that are increasing in volume, that with the coming of autumn there will be a sharp revival.

But apart from any considerations of supply and demand there is a strong inclination on the part of the machinery people to put aside premiums and penalties, and to do business on the accepted basis of an honest attempt to live up to contract, including delivery at agreed time, at regular prices, neither reduced by penalties nor increased by premiums. There is ample reason for this

attitude. It is practically impossible to insure the fulfillment of a contract at a specified date, in a market which renders it impracticable for a manufacturer or dealer to carry machinery in stock. The manufacturer names a date in good faith, making due allowance for delays. He may have a machine approaching completion, so that the chance for a setback seems very small, and yet may be unable to keep his promise. In a recent instance a builder of metal planers had wired a customer in the morning that a heavy machine would be shipped within a week, naming the date. Everything was completed except some final operations in planing the table. That very afternoon the tool laid bare a serious blowhole in an under surface of a T slot. No patching could repair the flaw. A new table was necessary to complete the machine. So within a few hours of the sending of the telegram another followed setting back delivery a number of days. This is an example of what the worker in metal has often to contend with in carrying out his plans. The ordinary contract provisions against delay by fire, accident or strike do not begin to cover his risks. His customer may say: "Why do you object to a penalty when you promise the machine for this date?" And he is sincere when he replies: "We make this promise in good faith. Unless something unforeseen arises our promise will be kept. We cannot guard against the unavoidable."

It is a commonly accepted practice that when a penalty is exacted for failure to meet the contract date of delivery there shall be a compensating premium clause. If the machinery builder is to pay \$10 a day for whatever time elapses between agreed date and actual date of shipment, then his customer must pay a like amount for each day of the ante-dating of delivery. This provision may not always be reasonable. The customer may not want the machine before the agreed date; his building may not be ready for it; the foundations of the tool may not be in place; or some other reason may exist, so that an earlier delivery would mean nothing of advantage to him. Yet on the other hand a delay in delivery might be costly, for the lack of the machine in his works might mean the loss of money.

But granting that the principle is correct, that where a penalty is exacted it should be accompanied by a premium of like amount, there are still serious objections to the practice, according to the experience of manufacturers of machinery. The customer may have been insistent on the inclusion of a penalty clause in the contract and may have acceded to the corresponding premium clause, but what is the result if the machine is shipped a week ahead of time and the manufacturer or dealer demands his \$10 a day? The customer may pay it without a word of complaint, but what is his state of mind? According to a manufacturer who has had experience the customer is apt to argue to himself that a trick has been played, that the manufacturer knew from the beginning that he could antedate delivery, and that the premium was nothing less than an additional price, deliberately placed on the machine. The effect of such an incident is not good. It has happened that a manufacturer has waived the payment of a premium earned in this manner rather than run the chance of offending the customer. This explains why the seller dislikes almost equally the penalty and the premium. Many houses have inflexible rules on the subject, accepting such contracts only in the case of Government work that requires a bond, which may be classed as a penalty; and this bond is one of the reasons why machinemen are not always keen to bid for Government contracts.

With some machine tool firms it is the custom in

periods of great demand to save out for themselves one or two machines of every lot. They book orders for all other machines, but the few exceptions are held as a sort of reserve for emergency cases. Occasionally a premium may have been obtained for such a machine, where it could be sold outside of the territory of a dealer, or dealers may have shared in the additional profit, where the customer was in their field of operations. Usually, however, the machines have been disposed of to better advantage at regular price to some exceptional buyer. It may be that a first order from a foreign house would be filled in this manner, or some valued customer would be helped out of a difficulty, or an agent in a new field accommodated. This last is important, because some agents are unable to stock up in advance, depending entirely upon the shop as a source of supply. Such reserve machines have been important factors in making friends, with results oftentimes far beyond the immediate financial gain from a premium, with its bad taste in the mouth of the customer.

The Advantages of Manual Training.

A problem of timely importance in our industrial life, and one that is commanding wide attention, is how best to provide means for recruiting the ranks of skilled artisans with workers fitted by education and training for competent service as craftsmen in the various trades. The old apprentice system, now practically obsolete, was often productive of a high degree of manual skill, and sometimes, when coupled with innate genius in the individual, furnished master workmen of rare ability. Generally, however, the lack of even elementary education proved a bar to the achievement of such results as are required to meet the needs of present day progress. That under modern conditions the welfare of the masses depends on combined mental and manual training is well understood. How to bring within the reach of the greatest number the benefits of such education is the vital question.

Many plans, some of them utopian, to be sure, have been proposed, and some very practical agencies are now at work to the same end. Among the latter may be classed the correspondence schools, whose influence has been widely exerted, and to good purpose. Though broad in scope, these organizations are likely to appeal more strongly and successfully to those of maturer age, who through experience have been made to realize the value of higher knowledge. In closer touch with the people, and better supplying the needs of youth, are the opportunities afforded by public manual training high schools for coincident mental and manual training. It is objected, however, that but a small percentage of the pupils attending the grammar schools can afford to, or at least do, continue through the high school course, and that therefore the usefulness of these institutions is sharply limited. This view has led to the advocacy of a wide extension of manual training and domestic science courses in grade schools, where they are now established in a limited way. But it is contended that the extent of such instruction possible in the lower schools is wholly inadequate to fit pupils for practical work in the handicraft of any trade or occupation, and that in consequence the gain by diverting time from academic studies is not of compensating value. It is probably safe to assume that at some point between the two extremes the true solution will be found.

Similar in purpose to the results sought through the grade school systems, though more specific in application, are the trade schools organized under the auspices of

various bodies for furnishing instruction and training in this or that trade. These have received warm encouragement from employers, collectively and individually, and give promise of extended development and favorable results. They have not, however, escaped opposition from labor organizations, which mistakenly interpret the movement as antagonistic to their interests. But a more serious difficulty in every plan designed to broaden the reach of utilitarian education is the inability of the poorer classes to spend the time and money necessary under the most liberal provisions for this instruction. To meet these conditions it has been suggested that trade schools be established which through the co-operation of manufacturers might be made self-supporting. The idea is that the pupils shall become wage earners by devoting the time allotted to manual instruction to practical work on material furnished by manufacturing plants. Though the proposition is laudable in its purpose, it is extremely doubtful if it will bear the test of practical application. However educators and others may differ as to ways and means, all are agreed that under our present economic system there exists an emphatic demand for a wide extension of all the practical agencies affording educational advantages in manual training.

The Prospects for Large Marine Gas Engines.

Confidence in the probable use of internal combustion engines for propelling large vessels is not shared by all. An eminent English marine engineer, Francis E. Elgar, in a paper read recently at the Engineering Conference held at the Institution of Civil Engineers, London, was extremely skeptical that such applications would be made, at least for some time to come. His paper included a recapitulation of the characteristics of efficiency, safety and economy, which must be developed and united in this type of engine before it can be successful in marine use on a large scale. His summary, which is worthy of careful consideration, follows:

1. The engine must be reversible.
2. It must be capable of being quickly stopped and started, either ahead or astern.
3. It must be capable of being promptly accelerated to any speed between dead, slow and full speed, and of being kept steadily at the required speed for any length of time. "Dead slow" ought not to be faster than one-quarter of full speed, and should be less in very fast vessels.
4. It must be capable of running continuously for long distances, with but short intervals between the runs, without risk of stoppage and breakdown.
5. It must be capable of working well in rough as well as smooth water, or in a seaway in which the variable immersion of the propeller causes fluctuating resistance.
6. All working parts must be readily accessible for overhauling, and all working parts must be capable of being promptly and easily adjusted.
7. The engine must be economical in fuel, especially at its ordinary working speed.
8. It must be compact, light in weight, and well balanced, so as not to cause vibration.
9. It must not involve any risk of accumulation of gas in the ship, such as to form an explosive mixture.
10. Above all, it must be capable of using a fuel whose supply at moderate price is practically unlimited, and can be readily obtained in any part of the world a ship might visit.

Referring to published plans for installing gas and oil machinery in 16,000-ton battleships, Mr. Elgar maintains that "this exists at present in imagination only." "It is impossible," he continues, "for any one to judge by what has been achieved up to the present in this direction, what weight or space, or what consumption of fuel would be required for the internal combustion engines of greater power, that might, perhaps, ultimately be made to fulfill the onerous requirements of marine work. Engineers and metallurgists may, by working together, succeed some day in overcoming the difficulties

of producing large cylinders which will stand the high impulses and great and rapid variations of temperature that occur with internal combustion, but until this is accomplished no great step ahead has been taken."

There are those who will be inclined to consider this view extreme. Many installations of large internal combustion engines have been successful ashore. It is natural to be credulous that in the future engineers may solve the problems of any new branch of engineering. Many times in the past a few years has sufficed to contradict the most distinguished disbelievers.

Another paper read at the conference told of the progress made with the marine steam turbine, which has grown in its application from the tiny Turbinia of 1894 to the gigantic Lusitania and Dreadnought of to-day. A curve showing the total horsepower of steam turbines applied to marine propulsion has its beginning at zero in 1896, and its end at 390,000 hp. in 1906. It is doubtful if many engineers at the advent of the Turbinia expected a turbine propelled Lusitania within 10 years. Repeated instances of the sort have bred a confidence in the world's engineering genius, that warrants hope for great ships propelled by combustion engines, in the comparatively near future, and cheaply, perhaps with crude oil, perhaps with alcohol or other clean fuel.

Yet Mr. Elgar's list of qualifications that the engine must possess is by no means unreasonable. It would be difficult to eliminate one of them. Some of the problems have not been nearly worked out in their application in a large sense, and others will require a good deal of advancement before they are completely solved, even for small powers. In large ships the engines must be as safe and sure and economical as the reciprocating engine or the turbine. The large power unit installed on unyielding, immovable foundations in a stationary power plant is surrounded by very different problems from those the marine engineer must face in applying the same type of engine to a large vessel. His difficulties are fully as great as those encountered in the development of the steam engine, and perhaps they are greater, because of the nature of the fuel and of its application to the engine. Great progress has been made with the marine combustion engine, but few will dispute that it is still in comparative infancy. The question is, How soon will it reach the maturity of an accepted type of engine for large ships?

CORRESPONDENCE.

Graphite Lubrication.

To the Editor: On page 86 of *The Iron Age* of July 11 appeared an article by H. C. Woodruff on "The Lubricating Properties of Amorphous Graphite." Particular stress was laid on the fact that amorphous graphite will stay put, and is therefore a superior graphite for lubricating purposes, but that flake graphite, no matter how finely ground, will not. I have used graphite as a lubricant for years, having been an engineer for 25 years, and therefore feel competent to point out what I have found to be the difference between flake graphite and amorphous graphite.

If one were to wet his finger in ordinary lubricating oil and then dip it into flake graphite he would find that the graphite would attach itself to his finger, like scales on a fish's back. If thin tissue paper is torn into fine strips and strewn on the floor it would be more difficult to sweep up than if the paper were rolled into small balls, which illustrates the action of flake graphite when used as a lubricant.

Amorphous graphite is washed about, and does not get attached to the irregularities in the metal surfaces as flake graphite does, and this is best illustrated in the

following manner: If one should put in a shallow stream of swiftly moving water a thin, flat stone, illustrating in a crude way the formation of flake graphite, and a round or irregular stone, illustrating the formation of amorphous graphite, the round stone will be washed down stream, due to the small surface of contact, while the flat stone will catch upon the first obstruction or irregularity (and "stay put").

The function of flake graphite is to attach itself to the minute irregularities which are known to exist in all metal surfaces, and they in time will be covered with a veneer-like coating, possessing the highest lubricating qualities, and, instead of having actual metallic contact, there is graphite to graphite contact, which will not happen when amorphous graphite is used, because it has not the adhesive qualities that the flake has.

Amorphous graphite, when used as a lubricant with ordinary oil, will invariably form paste balls, due to its extreme fineness and the breaking down of the particles, and it needs no elaborate discussion to point out the trouble which this will make.

A few years ago I tried some of the best amorphous graphite and oil on the crank pin of my Allis-Chalmers engine, which is lubricated by a stationary cup through a hollow ball and pipe, feeding the graphite and oil to the crank pin through the ball and pipe with a squirt gun while the engine was in motion, as I had read and heard that amorphous graphite possessed greater lubricating qualities than flake graphite, but it did not take me long to change back. In a short time the temperature of the crank pin was much higher; I was forced to shut down and found that the oil passage through the center of the crank pin was completely clogged up, and that paste or putty balls were formed.

I have never seen this happen with flake graphite, and think that it is probably due to the fact that the flake graphite will not pack, and that if there is a tendency for some to collect in the oil grooves, it will act as a sieve, and that it will eventually be carried away by the oil passing through. I have noticed, however, that a thin layer of flake graphite had formed over the channel walls.

The best means of telling which lubricant is the better is by actual test and the opinion of authorities. Tests were made by Professor Goss of Purdue University, who is generally recognized as a leading authority on graphite lubrication, and he says, as quoted in *Graphite*, September, 1906, page 678: "Putting the results of this test in the simplest form, it is safe to say that when the amorphous graphite is used the friction is three times as great under light loads, and about twice as great under heavy loads as when flake graphite is employed. The fact that when amorphous graphite was used the pressure could not be carried above 60 lb. without serious heating, shows clearly that the flake graphite does persistently attach itself to the frictional surfaces."

Such an eminent authority as Chas. E. Duryea, in his instruction booklet of the Duryea car, says that flake graphite should be used.

The Joseph Dixon Crucible Company, Jersey City, N. J., has prepared a number of booklets which go very deeply into the subject of lubrication, and prove conclusively by facts and figures that flake graphite is a superior lubricant in every way to amorphous graphite.

A claim is made that amorphous graphite will stay suspended longer in oil than flake graphite. This statement was probably made in absolute sincerity; but the graphite will settle, and any engineer who uses it in a lubricator certainly runs a great risk of clogging up the feed pipes, as the specific gravity of graphite is greater than that of any oil. There are on the market special graphite lubricators which are so built that the lubricating oil has to pass over the graphite in going to its work, and in this manner every drop of oil carries its mite of fine flake graphite. The positive force feed lubricators operate in the same way.

Another fact which must not be overlooked is that amorphous graphite can be easily adulterated without detection by the naked eye, while flake graphite cannot be, as one could easily see it.

WILLIAM BURNS.

The Washburn Wire Company's Additions.

The Washburn Wire Company has broken ground for extensive additions to its plant at Phillipsdale, R. I., preparatory to transferring the manufacture of wire rods and wire from the company's Auburn, R. I., plant. The buildings and lands at Auburn have recently been sold to the General Fire Extinguisher Company, Providence, for occupancy by January 1, 1908. The new buildings include a rod mill, power house, boiler house, annealing house and wire mill and are to be located south of and parallel to the open hearth building and blooming mill. The location affords excellent facilities for the economic handling of materials and product. The New York, New Haven & Hartford Railroad passes the east side of the plant, while the company's wharf on the Seekonk River is a few hundred feet west. Here the coal for the entire plant is unloaded from vessels and delivered to the coal pockets by means of an elevated gravity discharge railway. A large portion of the raw material for the open hearth department is also received by water and unloaded at the dock, whence the locomotives of the company convey it to the open hearth furnaces. When the new plant is completed a considerable portion of the product of the rod mill will be shipped by water direct to the New York factory, at 117th and 118th streets and the Harlem River, where high grade special wire is produced, including all kinds of rounds, flats, shapes, clock and motor springs, corset wire, piano wire, band saw, spoke wire, spring and rope wire, needle and pin wire.

The new rod mill building will be 65 x 180 ft., with a large monitor roof, and will be built of structural steel, with corrugated iron roofing and side sheathing. The contract has been awarded to the McClintic-Marshall Construction Company. The rod mill, which is to be transferred from the Auburn plant, will be remodeled and when completed will consist of a three-high roughing mill, 16 and 10 in. continuous trains and a 10-in. Belgian train. Its capacity will be increased approximately 75 per cent. The mill is designed to roll round rods ranging from $\frac{5}{8}$ in. to No. 5 gauge, and flat rods ranging from 2 in. to $\frac{1}{2}$ in. by No. 16. It will also produce shapes of various sizes. The mill will be equipped with the company's own type of reels for coiling flat rods ribbon fashion and will have ample reel capacity for the coiling of round and shape rods. Hot shears and a 5-ton electric traveling crane having 61 ft. 7 in. span will be added to the mill. The furnaces are of the reverberatory type, but have special features, with a view to heating the steel uniformly and with a low consumption of fuel.

The power house will be a lean-to, 50 x 180 ft. It will contain two tandem compound engines capable of developing 2000 hp. One will be connected to the roughing and continuous mills and the other to the Belgian mill. There will also be two Westinghouse electric generators having a combined capacity of 400 kw., direct connected to Westinghouse compound engines. The building will contain a central condensing apparatus and high pressure general circulating and boiler feed pumps.

The boiler house, 50 x 96 ft., will be of structural steel, with monitor roof, corrugated roofing and side sheathing. There will be eight 7 x 21 ft. boilers of the return tubular type, capable of developing 2500 hp., carrying 150 lb. steam pressure. These are now being built by the Stewart Boiler Works, Worcester, Mass. This building will be 8 ft. below the floor level of the power house, affording an easy delivery of coal to the boilers from the company's broad gauge cars. A brick chimney 150 ft. high, with a 7-ft. flue, will be erected.

The annealing house will be 84 x 91 ft., equipped with cleaning and annealing apparatus and bake ovens.

The wire mill, which adjoins the annealing house, will be of brick, with gravel roof supported by steel trusses, and will be 70 x 164 ft. Upon the first floor will be located the wire nail machines, cooperage shop, straightening and cutting machines, liquor finish and coppered wire draw benches. The second floor will be used as a general wire drawing room. Here different grades of specialty wire, ranging in size from $\frac{5}{8}$ in. to No. 20 gauge, together with the various shapes, will be drawn. A special feature of the machinery in this mill will be the electric

drive, the draw benches and other machinery being connected by motors.

The shipping and packing rooms will be in the west end of the second floor of the wire mill, where the wire will be tested, inspected and prepared for shipment. Upon broad gauge tracks running the entire length of and parallel to the mill, cars will be placed for the shipment of the finished product. Elevators at convenient points in the mill will convey the material from one floor to the other. The machinery now being operated at the Auburn plant will be installed in this mill, together with new machinery being designed by the company. Practically all of the product of this new plant will be made from steel produced in the open hearth department, which has been in operation several years and which also furnishes the New York plant with its requirements of high grade steel.

A Strike Ties Up Duluth Ore Docks.

DULUTH, MINN., July 17, 1907.—(By Telegraph.)—The strike of ore shipping employees, expected a week ago, has materialized. There have been no vessels at the Duluth, Missabe & Northern docks since Sunday morning. These docks ship an average of nearly 100,000 tons of ore daily. It is expected that the dock men working for the Great Northern Road will strike to-day, and that before the week ends all roads shipping from Minnesota will be tied up. The duration of the strike is indefinite. The men have violated their contract made in May to last until November, and the roads are not inclined to compromise. The strikers ask an advance of 25 cents on present wages, which are \$2.25 for day men and \$2.50 for night men.

A San Francisco Concrete Building.—Of the new buildings completed in San Francisco one of the first was a tea warehouse of monolithic concrete, having three stories and basement, and measuring 60 x 175 ft. The concrete consists of one part Portland cement, two of sand and four of 1-in. broken stone. The floors are designed to carry a live load of 250 lb. per square foot. The floor panels measure 14 x 20 ft., with slabs 6 in. thick. They are reinforced by round steel rods spaced 12 in. apart, and also by Nos. 9 and 11 wire netting of 4 x 6 in. rectangular mesh. The longitudinal floor beams are 12 x 10 in., each reinforced by four $\frac{3}{4}$ in. round rods. The main girders, which rest upon the columns, are 12 x 20 in., all below the slabs, each reinforced by 1 $\frac{1}{2}$ in. rods. The roof, which has a very slight rise, is of the slab form, similar to the floors, but lighter. The slabs are 3 $\frac{1}{2}$ in. thick, and the roof beams are 10 x 10 in., with four $\frac{3}{4}$ in. rods. The girders on which these beams rest are 10 x 14 in., with six 1-in. rods. The columns in the basement are 22 x 22 in.; in the two lower stories 16 x 16 in.; in the upper story 10 x 10 in., all reinforced by steel rods.

Centrifugal Fan Calculations.—Rules for calculating the capacity and power requirements of centrifugal fans are given by Professor Carpenter. The capacity of fans, expressed in cubic feet of air delivered per minute, is equal to the cube of the diameter of the fan wheel in feet, multiplied by the number of revolutions per minute, and again multiplied by a coefficient which, for a fan with a single inlet delivering air without pressure, is 0.6; delivering air with a pressure of 1 in. of water, the coefficient becomes 0.5; while it is 0.4 when delivering air with a pressure of 1 ounce. For fans with double inlets the coefficient should be increased about 50 per cent. For practical purposes the ventilation capacity of a fan in cubic feet per revolution would equal 0.4 times the cube of the diameter in feet. The horsepower required for a given fan or blower is equal to the fifth power of the diameter in feet, multiplied by the cube of the number of revolutions per second, and divided by a coefficient which, for free delivery, is 30,000,000; for delivery against a pressure of 1 ounce, 20,000,000; against 2 ounces, 10,000,000. For other delivery pressures the coefficient is obtained by dividing 20,000,000 by the pressure in ounces per square inch.

NEWS OF THE WORKS.

Iron and Steel.

The American Spiral Spring & Mfg. Company, Pittsburgh, Pa., has purchased a plot of ground, 100 x 400 ft., adjoining its plant on Butler street, upon which it intends to erect a new building 60 x 200 ft., to be devoted to the manufacture of special flat and spiral springs.

Jefferson Furnace, at Oak Hill, Ohio, which was built over half a century ago, was not in operation during the first half of 1907. It is being overhauled, however, and operations will probably be resumed in August. Its annual capacity is about 3500 tons of warm blast charcoal pig iron.

The Pequest Company, Buttzville, N. J., has not definitely decided to dismantle its furnace. In case this is done a new furnace may be erected.

The new furnace which the Jackson Iron & Steel Company is erecting at Jackson, Ohio, will probably be ready for operation in November. High silicon pig iron will be made.

General Machinery.

The business of James Clark, Jr., & Co., Incorporated, Louisville, Ky., has been incorporated with a capital stock of \$250,000, of which \$100,000 is preferred and \$150,000 common stock. Practically all has been subscribed for. The incorporation has been necessitated by the continued growth of the business, which was originally established in 1892 under the firm name of Cooper & Clark, and three years later was succeeded by James Clark, Jr., & Co. James Clark, Jr., having purchased outright the interest of L. H. Cooper. The company manufactures direct current dynamos and motors, electrically driven machine tools, and conducts an extensive jobbing business in electrical supplies, fittings and fixtures. The jobbing branch of the business is confined mostly to the Southern States. The manufactured product is shipped to all parts of the world.

The Southern Car Mfg. & Supply Company, Beaumont, Texas, of which J. A. Wiggs, Jr., is the proprietor, has been induced to locate a plant in Chattanooga, Tenn. A 12-acre site has been purchased, adjacent to the new plant of the American Brake-Shoe & Foundry Company, for about \$20,000. Arrangements have been made with Adams & Alsop, Chattanooga, for drawing plans for the buildings. The contract for the structural material has been let to the Converse Bridge Company, Chattanooga. The company will manufacture engines, pumps, &c.

The Southern Mfg. & Supply Company has been organized in Albany, Ga., by B. S. Coop, M. A. Jarrard and M. L. Markham. The company will operate a thoroughly equipped machine shop, the machinery for which has been ordered.

The La Follette Coal, Iron & Railroad Company, La Follette, Tenn., has contracted with the Morgan-Gardner Electric Company, Chicago, for a full electric equipment, haulage and mining machinery for its Gem mines at Peabody. The entire plant is to be installed by October 15.

The Linderman Mfg. Company, Muskegon, Mich., maker of woodworking machinery, is preparing to build a 55 x 400 ft. extension to its plant.

Among the improvements of the Great Northern Railroad, now in contemplation and under way, is a new roundhouse at Minot, N. D. In addition new shops are being built at Willmar, Minn., and Williston, N. D., besides extensions to existing shops at other points. To provide for the 300 new engines recently purchased the company will this year extend 127 stalls and construct 44 new stalls in various roundhouses. These are part of the provisions being made for increasing facilities to handle the rush of business that will be offered when crops mature in the fall.

The Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa. established a new shipping record in May, sending out 750 carloads of electrical machinery, or an average of 30 carloads a day, aggregating 10,000 tons and representing in value about \$4,000,000. This exceeds by 110 cars the best shipping record for one month at these works, that of August, 1906. The new orders for May amounted to nearly \$4,000,000. There has not been any let up in new business since the first of the year. The shipments from the Westinghouse Machine Company's shops in May also reached high mark, the company having sent out from the works 90 engines, aggregating 50,000 hp. These included gas engines from 10 to 1000 hp. and steam turbines from 1000 to 10,000 hp.

The Canadian Pacific Railroad has placed contract for the construction of roundhouses at Cranbrook, Coleridge, Strathcona and Swift Current, Canada, and additions to the shops and car sheds at Winnipeg, Man. The estimated cost of the work is \$125,000.

Recent sales of the B. F. Sturtevant Company, Boston, Mass., include: Generating sets—Electric Construction Company, Richmond, Va.; McCann Iron Company, Philadelphia, Pa.; Metric Metal Works, Erie, Pa.; Sedalia Ice, Light & Fuel Company, Sedalia, Mo.; Board of Water Supply, New York. High pressure rotary boilers—Penberthy Injector Company, Detroit, Mich.; Boston Consolidated Mining Company, Salt Lake City, Utah;

American Storage Battery Company, Cambridgeport, Mass.; Sterritt-Thomas Foundry Company, Pittsburgh, Pa.; Traylor Engineering Company, Denver, Colo.; Davis & Furber Machine Company, North Andover, Mass.; Brompton Pulp & Paper Company, East Angus, Canada. Electric fans—Electric Supply Company, Charleston, S. C.; Seymour Packing Company, Topeka, Kan.; C. C. Richardson Paper Company, Lockland, Ohio; Pueblo & Suburban Traction & Light Company, Pueblo, Colo.; Armour Packing Company, Kansas City, Mo.; Alton Paving, Building & Fire Brick Company, Alton, Ill.; Waterbury Farrel Foundry & Machine Company, Waterbury, Conn.; ventilating apparatus for a large number of schools and public buildings. The Compania Fundidora de Hierro y Acero, Monterey, Mexico, is installing Sturtevant forced draft equipment, and the Kitson Machine Shops, Lowell, Mass.; General Chemical Company, Dundee, N. J., and Laurel Hill, N. J.; International Paper Company, Chisholm, Maine, mechanical draft for boilers.

Power Plant Equipment.

Recent sales of the Wm. B. Scaife & Sons Company, Pittsburgh, Pa., for We-Fu-Go water softening systems include: The Andrews Steel Company, Newport, Ky.; American Sheet & Tin Plate Company, Pittsburgh, Pa., 5000 hp.; Rochester & Pittsburgh Coal & Iron Company, De Lancey, Pa., 1500 hp., second contract; Youngstown Sheet & Tube Company, Youngstown, Ohio, 15,000 hp.; Pennsylvania Salt Mfg. Company, Natrona, Pa., 5000 hp., second contract; Norwalk Iron & Steel Company, Norwalk, Ohio, 1000 hp.; McConway & Torley Company, Pittsburgh, Pa., 1000 hp.

Muralt & Co., New York, have been awarded the contract for the installation of a modern municipal electric light plant at Franklin, La. Heine safety boilers, Harrisburg engines and Fort Wayne electric apparatus will be installed.

Foundries.

The new foundry of the Champion Machinery Company, Joliet, Ill., which has been under construction for the past four months, is now completed. The building, which is 60 x 66 ft., is made of reinforced concrete, and is equipped with a 48-in. cupola with motor driven fans. The building is designed to be fireproof.

The steel foundry of the Youngstown Foundry & Machine Company, Youngstown, Ohio, has closed down for four weeks to permit of the overhauling and rebuilding of the melting furnaces and increasing their capacity. Immediately after these changes are made the furnaces will be started.

The Portsmouth Machine & Casting Company, Portsmouth, Ohio, has purchased and is now remodeling the Portsmouth Foundry & Machine Works, which occupies about four squares of land. The company has some open capacity for machine work and castings under 10 tons in weight each.

The Flour City Ornamental Iron Works, Minneapolis, Minn., has awarded contract for the erection of a new brick and steel foundry building, 75 x 200 ft., to cost \$25,000.

Bridges and Buildings.

The A. E. Shorthill Company, Marshalltown, Iowa, fabricator of structural steel, boiler and machine shop work, has increased its capitalization from \$25,000 to \$250,000. This step was taken, first, to make provision for undivided profits and added real estate, and secondly, with a view to future extension of the bridge shop department, for the accommodation of which a building 60 x 180 ft. is contemplated. This improvement, however, will not be undertaken before the first of the year.

Motors and Small Engines.

W. H. Manly, cashier of the Birmingham Trust & Savings Company, Birmingham, Ala., has been appointed receiver of the White-Blakeslee Company, manufacturer of gas and gasoline engines. It is understood that the receiver will continue operating the plant and that the company will be reorganized.

Fires.

The plant of the American Scraper Company, Sidney, Ohio, was destroyed by fire July 9, only a small section being saved. The loss is estimated at \$100,000.

The new plant of the Glen Wagon Company, Seneca Falls, N. Y., was badly damaged by fire July 9.

The plant of the Manitoba Peat Fuel Company, Fort Frances, Ont., was burned July 7, the loss being about \$50,000.

The plant of the Cream Woven Wire Company, Allegheny, Pa., and the plant of the B. A. Gausman Machinery & Metal Company, occupying an adjoining building, were destroyed by fire July 10. The combined loss is placed at \$100,000.

The plant of the Carriage Wheel & Gear Company, Merrimac, Mass., was destroyed by fire July 16, the loss being about \$20,000.

Hardware.

The Bean Spray Pump Company, 171-177 West Santa Clara street, San José, Cal., nearly doubled its capacity during the past year for the manufacture of Bean patent spray pumps and nozzles.

The Russia Cement Company, Gloucester, Mass., has considerably enlarged its plant during the past two years, making extensive additions in the manufacturing department by the installation of new boilers and other machinery to keep abreast of the increasing sales of Le Page's adhesives. The works now have a floor area of over 100,000 sq. ft. The company reports meeting with much success in the manufacture of photo paste, which has been adopted in the schools of Greater New York and by the boards of education in other large cities of the country. Its labeling paste is also meeting a large demand from bottlers and brewers. Besides the factory at Gloucester the company operates plants at St. John, N. B., and San Francisco, Cal., and is about to erect a factory on Puget Sound at Anacortes, Wash. The plant at Gloucester has three Heine boilers of over 850 hp. and generates its own electricity for light and power. It is also equipped with fire apparatus of the most modern description.

To accommodate the increasing demand for its cold process horse nails, the Hoopetown Horse Nail Company, Hoopetown, Ill., has again found it necessary to enlarge its plant and increase its capacity. This will necessitate the installation of a large amount of special machinery, contracts for which have already been let. Some changes in buildings will also be necessary, work on which will be immediately commenced.

Miscellaneous.

The Standard Safe & Lock Company, Des Moines, Iowa, is contemplating improvements that will considerably increase the output of its plant. Plans, however, have not been matured, and no definite statement regarding them is at present available.

The Iron City Coal & Coke Company, Wabash Building, Pittsburgh, has purchased the plant of the H. R. Sackett Coal & Coke Company, Uniontown, Pa., consisting of 30 ovens, 30 to 40 acres of coal land, coke crusher and all necessary equipment. It will be operated as the Dorothea Works of the Iron City Coal & Coke Company.

The Boston Woven Hose & Rubber Company, Cambridge, Mass., is to largely increase its plant by the erection of a concrete and brick foundry building 75 x 160 ft., and a four-story brick hose building, 60 x 326 ft. Nearly all of the necessary machinery and other equipment has already been ordered.

The Rhode Island Tool Company, Providence, R. I., manufacturer of machine screws, is building an addition to its machine shop, 60 x 70 ft., to permit of the arrangement of machinery to better advantage.

The Main Automatic Mailing Machine Company has been organized in Columbus, Ohio, with a capital stock of \$50,000, by F. R. Main, C. A. Switzer, M. A. Corbett, C. A. Main and C. W. Dialce. The company will manufacture a new automatic mailing machine.

Among the recent shipments made to the United States Government by the Pittsburgh Automatic Vise & Tool Company, Pittsburgh, Pa., was one to the Portsmouth Navy Yard, including the largest vises ever constructed. These weigh 695 lb. each and are especially adapted for severe service.

The Worden Tool Company, Cleveland, manufacturer of machine knives, has increased its capital stock from \$30,000 to \$60,000. The company erected a new plant a few months ago on Scranton road.

The Buffalo Copper & Brass Rolling Mill, Buffalo, N. Y., broke ground last week for the first of the buildings of its new plant on the New York Central Railroad at Military road, Denver and Arizona streets.

The Barato Mfg. Company, Buffalo, N. Y., manufacturer of iron and brass bedsteads, will extend its plant on Louisiana street by building a large brick addition.

The American Steel Package Company, Defiance, Ohio, maker of sheet steel bottle cases, has increased its capacity by the addition of new machinery. The present equipment will be gradually increased by the installation of automatic machines suitable for the work.

The Westinghouse Air Brake Company is making a number of improvements to its plant at Wilmerding, Pa., to supply the increasing demand for brake and draft gear equipment. The company has in course of erection a core shop, 85 x 140 ft.; pattern shop and pattern storage room, 80 x 330 ft., and is about to begin the erection of a new carpenter shop 45 x 120 ft.

The McDonald Brothers Pitless Scale Company, Pleasant Hill, Mo., whose machine shops were recently destroyed by fire, is now rebuilding and expects to have the buildings completed in about two months. The company has placed an order for enough machinery to equip a temporary shop, and does not know at this time what additional machinery it will have to purchase for equipping the new buildings. The loss caused by the fire amounted to about \$14,000. The foundry and warehouses were not injured.

The Graphoil Lubricator Company, recently incorporated, has acquired the Graphoil specialty business of the Comstock Engine Company, Brooklyn, N. Y., and will continue the manufacture of the lubricators as heretofore at 49 to 61 Clymer street. The company will manufacture and sell a complete line of Graphoil

cups, which may be readily adapted to any oil system already installed. Chester Comstock is president; Charles Leffler, vice-president; George H. Nickerson, secretary, and J. Judson Trappan, treasurer.

The Seaboard Air Line, which recently purchased a large amount of machinery for its new shops at Jacksonville, Fla., placed contract with Tate, Jones & Co., Pittsburgh, Pa., for the oil burning furnaces for the new shops.

The Niagara Electro Chemical Company, Niagara Falls, N. Y., has prepared plans for a brick and steel addition to its plant, 61 x 210 ft., to include a transformer room, 34 x 122 ft., and to cost about \$20,000. Equipment is now being installed in the addition which was recently completed.

Trade Publications.

Feed Water Heaters.—Harrison Safety Boiler Works, Seventeenth street and Allegheny avenue, Philadelphia, Pa. Circular. Concisely summarizes what a Cochrane feed water heater is and what it does. Claim is made that in many plants it will save about 16 per cent. of the coal bill, one-sixth of the water bill, improve the quality of the boiler feed supply, increase the capacity of the boilers by one-sixth, and supply hot water not only for boiler feeding but also for other purposes about industrial plants, as washing, dyeing, &c. Examples are given of practical applications at coal mines, paper mills, in condensing and noncondensing plants, and in steam power plants generally. Cochrane oil separators, which make it possible to use exhaust steam for every purpose to which live steam of the same temperature could be applied, as for heating and drying, are also described and illustrated.

Steam Plant Economy.—Harrison Safety Boiler Works, Seventeenth street and Allegheny avenue, Philadelphia, Pa. Circular. Subject, "Saving Exhaust Steam Under Difficulties." Particularly it deals with the waste of steam by iron and steel mills where the conditions are such as to make it impracticable to use condensers. It is also a problem to make use of the exhaust steam in preheating boiler feed water, inasmuch as the steam and the water must usually be delivered uniformly. The solution in the case of a 6000-hp. reversing blooming mill engine is described, and consisted of the application of a special Cochrane heater, the cold water supply to which is automatically admitted only while the engine runs. A prolonged stop of the engine allows cold water to be admitted through another valve with simultaneous admission of live steam from the boilers. This is not wasteful when it is considered that the steam would in any case be blown off through the safety valve. Attention is also directed to the ability to increase economy in various other industries by the use of apparatus manufactured by the company.

OBITUARY.

THOMAS H. CAPP, president of the Union Boiler & Mfg. Company, Lebanon, Pa., died July 3 at Jonestown, Pa.

FRANK P. PFLEGHAR, JR., of the firm of Frank P. Pfleghar & Son, manufacturers of hardware specialties, New Haven, Conn., died suddenly July 11.

Five Conciliators for the Bar Iron Scale.—An arrangement has been made between the Republic Iron & Steel Company and the Amalgamated Association whereby there will be five instead of three conciliators, the latter number being contemplated in the standing agreement and concurred in at the conference last week. The Republic Company has now named, in addition to Henry W. Heedy, Warner Arms of Youngstown, while the Amalgamated Association, in addition to Ben Davis of Birmingham, has named John J. Butler of Youngstown. These four will select a fifth.

The fuel cost for a small suction gas producer plant during nine months in 1906 averaged 0.73 cent per kilowatt-hour. With an output of 500 kw.-hr. per day, the coal consumption was 1100 lb., corresponding with a cost per unit of 0.6 cent. When the power developed fell to 180 kw.-hr., the fuel used amounted to 540 lb., and the cost to 0.8 cent per unit. Allowing for depreciation and service, it is estimated that the average cost of this plant per kilowatt-hour did not exceed 3 cents. The plant consists of a 20-hp. engine drawing its gas from a suction producer and driving a small dynamo by chain drive. The plant is in charge of a man who is employed at other duties, giving it only occasional attention. He had no previous knowledge of gas engines or producers.

The Iron and Metal Trades

Rarely have reports from all parts of the country agreed so thoroughly concerning the condition of the Pig Iron markets. They are lifeless. Practically all pressure for immediate delivery has disappeared, and the complaint is even cropping up among melters that some furnaces are crowding shipments on them. Some foreign Pig Iron is still straggling in, but prices must be made pretty low to move it.

With many branches of the Finished Iron and Steel trades practically pegged, the manufacturers who purchase their supplies of Pig Iron in the open market aver their inability to pay present asking prices, and they insist that Pig Iron must come down.

The Steel works and mills are still very well provided with work, but new tonnage is not and could not be well expected to come in freely at this season of the year. The result is that in some lines in which there has been bitter complaint over deliveries for many months the mills are beginning to catch up. This is true of Black Sheets, although delays are still occurring in Galvanized Sheets.

The Carnegie Steel Company has secured the material for another lake boat for next season. This makes 10 boats thus far, to be built by the American Shipbuilding and the Great Lakes Engineering companies, for which the material has been placed in the last four or five weeks.

Some additional bridge work for the Northwest, calling for about 7000 tons has been placed, making the total for the two railroads about 20,000 tons. Among the inquiries which have come up are 3000 tons for car barges at Baton Rouge, La., and 4000 tons for a line of packets between St. Louis and Kansas City. Some of the larger structural work in the East, which has been pending for some time past, has not yet come to a head.

At some of the independent Tin Plate mills some of the Tin house labor has gone out, but the matter is of little consequence. A more troublesome matter may be the action of the dockmen at the Lake Superior Ore shipping ports, some of whom have already gone out in defiance of contracts, and most of the rest of whom threaten to follow before the end of the week.

The Copper market has weakened again. Electrolytic Copper has sold in moderate quantities on the basis of 21 cents in New York, and it has since been offered at lower figures. So far as can be learned consumers have not taken hold at the prices established last week, and now 20 c. for Electrolytic is freely talked about.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

July 17, July 10, June 19, July 19, 1907, 1907, 1907, 1906.

PIG IRON, Per Gross Ton :				
Foundry No. 2, Standard, Philadelphia	\$23.00	\$23.00	\$24.50	\$18.25
Foundry No. 2, Southern, Cincinnati	23.75	23.75	23.75	16.00
Foundry No. 2, Local, Chicago ..	25.50	25.50	26.00	18.25
Bessemer, Pittsburgh	23.40	23.90	24.15	18.60
Gray Forge, Pittsburgh	22.90	22.90	23.15	16.35
Lake Superior Charcoal, Chicago ..	27.00	27.00	27.50	19.00
BILLETS, &c., Per Gross Ton :				
Bessemer Billets, Pittsburgh ..	30.00	30.00	29.50	27.50
Forging Billets, Pittsburgh ..	34.00	34.00	34.00	33.00
Open Hearth Billets, Phila.	32.50	32.50	32.50	29.00
Wire Rods, Pittsburgh	36.50	36.50	37.00	34.00
Steel Rails, Heavy, Eastern Mill ..	28.00	28.00	28.00	28.00

OLD MATERIAL, Per Gross Ton :				
Steel Rails, Melting, Chicago ..	18.00	18.00	19.00	14.00
Steel Rails, Melting, Phila.	17.75	17.75	20.00	16.25
Iron Rails, Chicago	24.50	24.50	24.50	21.25
Iron Rails, Philadelphia	25.00	25.00	27.50	20.50
Car Wheels, Chicago	23.50	24.50	25.50	18.00
Car Wheels, Philadelphia	25.00	25.00	25.50	16.00
Heavy Steel Scrap, Pittsburgh ..	18.00	18.00	18.25	15.75
Heavy Steel Scrap, Chicago	16.00	16.50	16.50	13.50
Heavy Steel Scrap, Philadelphia ..	17.50	17.50	18.75	16.00

FINISHED IRON AND STEEL,

Per Pound :	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia ..	1.83½	1.83½	1.83½	1.63½
Common Iron Bars, Chicago	1.78	1.78	1.78	1.60½
Common Iron Bars, Pittsburgh ..	1.70	1.70	1.70	1.50
Steel Bars, Tidewater New York ..	1.86	1.86	1.86	1.64½
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.50
Tank Plates, Tidewater, New York ..	1.86	1.86	1.86	1.74½
Tank Plates, Pittsburgh	1.70	1.70	1.70	1.60
Beams, Tidewater, New York	1.86	1.86	1.86	1.84½
Beams, Pittsburgh	1.70	1.70	1.70	1.70
Angles, Tidewater, New York	1.86	1.86	1.86	1.84½
Angles, Pittsburgh	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh ..	1.90	1.90	1.90	1.57½
Skelp, Sheared Steel, Pittsburgh ..	1.90	1.90	1.90	1.60

SHEETS, NAILS AND WIRE,

Per Pound :	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.50	2.50	2.50	2.40
Wire Nails, Pittsburgh	2.00	2.00	2.00	1.85
Cut Nails, Pittsburgh	2.05	2.05	2.05	1.75
Barb Wire, Galv., Pittsburgh	2.45	2.45	2.45	2.30

METALS, Per Pound :	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	21.50	22.25	23.75	18.37½
Electrolytic Copper, New York ..	20.67½	22.00	23.00	18.12½
Spelter, New York	6.15	6.30	6.40	5.95
Spelter, St. Louis	6.00	6.12½	6.35	5.85
Lead, New York	5.25	5.30	5.75	5.75
Lead, St. Louis	5.12½	5.15	5.65	5.70
Tin, New York	40.25	41.35	43.25	36.25
Antimony, Hallett, New York	11.50	10.00	12.00	22.50
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York	\$4.09	\$4.09	\$4.09	\$3.94

Chicago.

FISHER BUILDING, July 17, 1907.

The market is devoid of striking features. Transactions of the past week show a degree of stability rarely witnessed under similar conditions. Ordinarily persistent dullness in any commodity results in the offer of price concessions to stimulate trade. An exception to the rule is found in the Pig Iron market, which rarely approaches such a condition of inactivity as now exists. Prices notwithstanding have so far withstood the pressure. Furnace interests are relying on unprovided fourth quarter requirements to complete their schedules. A prominent seller says that he has knowledge of at least 50,000 tons that will be required to supply the needs of not more than five consumers for the last quarter, unless the melt should be unexpectedly reduced. It is the expectation of such needs that sustains the market. New business in Structural Material up for figures includes a total of 7000 tons for use in river, barge and steamboat construction. Seven thousand tons was added last week to previous contracts placed by Northwestern railroad systems, and contracts aggregating 20,000 tons were placed by jobbing interests. As compared with the corresponding period of last year the tonnage of the Illinois Steel Company's mill for the six months ending with June of the present year shows an increase of 4000 tons per month. Specifications against Steel Bar contracts are being freely offered. The demand for Tubular goods is exceptionally strong and deliveries are aggravatingly slow. The further weakening of Scrap Material, foreshadowed last week, has been realized, and it is extremely doubtful if the full extent of the downward tendency has been reached. Dealers hesitate to crowd the market with offerings and buyers are holding aloof in the anticipation

of better prices. Considered in all its aspects, trade, though generally quieter in new business, is quite satisfactory and promises good results throughout the year.

Pig Iron.—Any market able to withstand a protracted period of extreme dullness without visible weakening must be regarded as occupying an exceptionally well entrenched position. With scarcely enough business to preserve a semblance of animation, prices of Pig Iron for all deliveries of this year are being maintained with a firmness that bespeaks confidence on the part of operators. While \$21.50, Birmingham, for No. 2 Foundry is the price adhered to for third quarter, and \$20 for fourth quarter, it is possible that a desirable tonnage offer might command \$20.50 for the entire half. No inquiries of this character have appeared, however, to test the acceptance of even this slight concession. It is becoming more and more apparent that unprovided requirements for the third quarter are extremely small; on the other hand there is reason to believe that those for the last quarter will closely approximate the unfilled furnace schedules for that period. In view of this condition sellers are awaiting the beginning of a buying movement, which they claim must sooner or later make its appearance. Meantime, the other side, confident that prices will at least not be advanced, is postponing action. Northern interests have not receded from their price on No. 2 Foundry of \$25 for delivery through the last half; and in the absence of any inquiry indicating a purpose to buy they are making no open quotations for the first quarter of next year. On the whole, the Pig Iron situation is strikingly propitious for vacations. The following prices are for July, August and September delivery, f.o.b. Chicago, the spread indicated representing the difference between the earlier and later dates of this period:

Lake Superior Charcoal.....	\$27.00 to \$27.50
Northern Coke Foundry, No. 1.....	26.00 to 26.50
Northern Coke Foundry, No. 2.....	25.50 to 26.00
Northern Coke Foundry, No. 3.....	25.00 to 25.50
Northern Scotch, No. 1.....	26.00 to 26.50
Ohio Strong Softeners, No. 1.....	26.00 to 26.50
Ohio Strong Softeners, No. 2.....	25.50 to 26.00
Southern Coke, No. 1.....	26.35 to 26.85
Southern Coke, No. 2.....	25.85 to 26.35
Southern Coke, No. 3.....	25.35 to 25.85
Southern Coke, No. 4.....	24.35 to 24.85
Southern Coke, No. 1 Soft.....	26.35 to 26.85
Southern Coke, No. 2 Soft.....	25.85 to 26.35
Southern Gray Forge.....	22.35 to 22.85
Southern Mottled.....	22.35 to 22.85
Malleable Bessemer.....	25.50 to 26.00
Standard Bessemer.....	25.90 to 26.40
Jackson Co. and Kentucky Silvery, 6 %	31.40 to 31.90
Jackson Co. and Kentucky Silvery, 8 %	32.40 to 32.90
Jackson Co. and Kentucky Silvery, 10 %	33.40 to 33.90

Billets and Rods.—Transactions in semifinished material are light, though prices for Forging Billets are firm at \$36 to \$38. No movement of note is observed in Rods, the scarcity of which is unabated. Quotations are unchanged at \$37 to \$38, Pittsburgh.

Rails and Track Supplies.—Though no transactions were recorded in this market for Standard Section Rails during the past week, there are some inquiries out which bid fair to develop into orders of considerable tonnage. No promising inquiries for Traction Rails have appeared, but a moderate business is being done in Light Rails. The slackened demand for Spikes has resulted in a further decline of 5c. per 100 lb. We quote as follows: Angle Bars, accompanying Rail orders, 1907 delivery, 1.65c.; car lots, 1.90c. to 1.95c.; Spikes, 2.20c. to 2.30c., according to delivery; Track Bolts, 2.65c. to 2.75c., base, Square Nuts, and 2.80c. to 2.90c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 30 to 45 lb. sections, \$35; 25-lb., \$36; 20-lb., \$37; 16-lb., \$38; 12-lb., \$39, f.o.b. mill. Standard Sections, \$28, f.o.b. mill, full freight to destination.

Structural Material.—Business in building Steel has been largely confined to small lots, of which quite a number are reported. Railroad requirements for bridge and viaduct work, representing a large tonnage, are still coming forward. To 13,000 tons of such material already placed by the Northern Pacific and Great Northern railroads, with the American Bridge Company, 7000 tons has been added. New inquiries in the market include 1200 tons for a new smelter to be built by the Copper Queen Mine; 600 tons for a new engine house for the Doe Run Lead Company, Doe Run, Mo.; 3000 tons for a line of car barges, up for figures from the Louisiana Railway Navigation Company, Baton Rouge. An inquiry for 4000 tons comes from interests having under consideration the building of a line of packets to ply between St. Louis and Kansas City. This project involves the building of four vessels. Mill contracts amounting in the aggregate to 20,000 tons were placed last week by jobbing interests. But little, if any, easing up is observable in the amount of tonnage being offered in specifications. Prices from store are quoted without change, at 2.05c. to 2.10c., and mill prices, at Chicago, are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.88c.; Angles, 3 to 6 in., 1/4-in. and heavier, 1.88c.; larger than 6 in. on one or both legs, 1.98c.; Beams, larger than 15 in., 1.98c.; Zees, 3 in. and over, 1.88c.; Tees, 3 in. and over, 1.93c., in addition to the usual extras

for cutting to extra lengths, punching, coping, bending and other shop work.

Plates.—New tonnage is less in evidence, but the demand for shipments on contracts is as insistent as ever. Delays are becoming less extended, though but few mills are in position to execute orders with normal promptness. Premium prices for immediate needs have not entirely disappeared. We quote for future delivery, as follows: Tank Plates, 1/4-in. and heavier, wider than 6 1/4 and up to 100 in. wide, inclusive, car lots, Chicago, 1.88c. to 2.08c.; 3-16 in., 1.98c. to 2.18c.; Nos. 7 and 8 gauge, 2.03c. to 2.23c.; No. 9, 2.13c. to 2.33c.; Flange quality, in widths up to 100 in., 1.98c. to 2.08c., base, for 1/4-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.98c. to 2.18c.; Flange quality, 2.08c. Store prices on Plates are as follows: Tank Plates, 1/4-in. and heavier, up to 72 in. wide, 2.20c. to 2.30c.; from 72 to 96 in. wide, 2.30c. to 2.40c.; 3-16 in., up to 60 in. wide, 2.30c. to 2.40c.; 72 in. wide, 2.50c. to 2.65c.; No. 8, up to 60 in. wide, 2.35c. to 2.45c.; Flange and Head quality, 0.25c. extra.

Sheets.—The supply of Sheets is considerably better as a result of prompter shipments from the mills, coupled with a little easier demand. This is notably true of Black Sheets in the heavier sizes, which from the independent mills can be had within 30 days. Warehouse stocks in jobbers' hands are now well supplied in all grades and sizes. Deliveries of Galvanized Sheets still lag, but even here the congestion is much less acute. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 2.03c.; No. 12, 2.08c.; No. 14, 2.13c.; No. 16, 2.23c.; Box Annealed, Nos. 17 to 21, 2.53c.; Nos. 22 to 24, 2.58c.; Nos. 25 to 26, 2.63c.; No. 27, 2.68c.; No. 28, 2.78c.; No. 29, 2.88c.; No. 30, 2.98c.; Galvanized Sheets, Nos. 10 to 14, 2.83c.; Nos. 15 and 16, 3.03c.; Nos. 17 to 21, 3.18c.; Nos. 22 to 24, 3.33c.; Nos. 25 and 26, 3.53c.; No. 27, 3.73c.; No. 28, 3.93c.; No. 30, 4.43c. Sheets from store: Blue Annealed, No. 10, 2.50c.; No. 12, 2.55c.; No. 14, 2.60c.; No. 16, 2.70c.; Box Annealed, Nos. 18 to 21, 2.80c.; Nos. 22 to 24, 2.85c.; No. 26, 2.90c.; No. 27, 2.95c.; No. 28, 3.05c.; No. 30, 3.45c.; Galvanized, from store: Nos. 10 to 20, 3.30c. to 3.35c.; Nos. 22 to 24, 3.55c. to 3.60c.; No. 26, 3.65c. to 3.70c.; No. 27, 3.85c. to 3.95c.; No. 28, 4.15c.; No. 30, 4.65c. to 4.70c.

Bars.—It is evident from the quieter movement in Bars that a very large part of forward contract requirements have been covered. The tonnage already placed occupy a large portion of mill capacities, and since it is assured that orders for current needs will be sufficient to complete unfinished schedules, the mills are making no special push for orders. Trade in Bar Iron is comparatively quiet, though it is considered satisfactory in volume for the season of the year. Mills of the Interstate Iron & Steel Company, which have been closed down for a couple of weeks for repairs, have resumed operation. The local mills of the Republic Iron & Steel Company, which shut down on July 3, have started up the 18-in. mill, and will resume with the 16 in. and Muck Bar mills next week. It is expected that all departments of the works will be in full operation by August 1. Quotations, Chicago, are as follows: Steel Bars, 1.78c., with half extras; Iron Bars, 1.78c.; Hoops, 2.18c., extras as per Hoop card; Bands, 1.78c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.88c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

Merchant Pipe.—The demand for Merchant Pipe is as yet unaffected by any of the influences that have operated to curtail the development of new business in other products. The supply is still inadequate to meet requirements. Delivery dates are not appreciably shortened, nor are any promises of immediate improvement in this respect made by the mills. The following mill discounts are quoted: Black Pipe, 3/4 to 6 in., 71.2; 7 to 12 in., 68.2; Galvanized, 3/4 to 6 in., 61.2. These discounts are subject to 1 point on the base. From store in small lots, Chicago jobbers quote 68 per cent. on Black Steel Pipe, 3/4 to 6 in. About 4 points advance above these prices is asked for Iron Pipe.

Boiler Tubes.—Shipments against contract are being made in large volume, and the demand is well sustained. Seamless Tubes are especially scarce, shipments not being promised sooner than 10 to 12 weeks. Mill quotations for future delivery on the base sizes are as follows: 2 3/4 to 5 in., in carload lots, Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2 1/2 in. and smaller, and lengths over 18 ft., and 2 1/2 in. and larger and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1 1/2 in.....	35	35	35
1 3/4 to 2 1/4 in.....	50	35	35
2 1/2 in.....	52 1/2	35	35
2 3/4 to 5 in.....	60	47 1/2	47 1/2
6 in. and larger.....	50	35	..

Merchant Steel.—While no movements of special significance is noticed, a fair amount of current business is being offered. Some unsteadiness in regular quotations on Shafting are reported, and occasionally a quotation of 50 and 10 by some interest is heard. Usual quotations are as

follows: Planished or Smooth Finished Tire Steel, 1.98c.; Iron Finish, up to $1\frac{1}{2}$ x $\frac{1}{2}$ in., 1.93c.; Iron Finish, $1\frac{1}{2}$ x $\frac{1}{2}$ in. and larger, 1.78c., base; Channels for solid Rubber Tires, $\frac{3}{4}$ to 1 in., 2.28c., and $1\frac{1}{2}$ in. and larger, 2.18c.; Smooth Finished Machinery Steel, 2.18c.; Flat Sleigh Shoe, 1.93c.; Concave and Convex Sleigh Shoe, 2.08c.; Cutter Shoe, 2.46 $\frac{1}{2}$ c.; Toe Calk Steel, 2.33c.; Railroad Spring, 1.98c.; Crucible Tool Steel, $7\frac{1}{4}$ c. to 8c., and still higher prices are asked on special grades. Shafting, 50 per cent. off in car lots, and 45 per cent. in less than car lots, base territory.

Cast Iron Pipe.—Inquiries involving large tonnage are scarce. Current orders for small lots are being received in fair quantity, the specifications being generally for small and medium size Pipe. The award on the Columbus, Ohio, Water Works requirements scheduled for July 10 has not yet been made. The only other lettings reported are those of the Mattoon Water Works, Mattoon, Ill., 500 tons, which was taken by the United States Cast Iron Pipe Company, and an inquiry for the same tonnage for the Steel Corporation's mining properties, at Colrairie, Minn. We quote per net ton, Chicago, as follows: Water Pipe, 4-in., \$38 to \$39; 6 to 12 in., \$37 to \$38; 16-in. and up, \$36 to \$37, with \$1 extra for Gas Pipe.

Coke.—Nothing has occurred since last report to change the situation materially. The demand is not perceptibly stronger. Connellsville 72-hr. Coke is quoted at \$3 and \$3.25 at the oven.

Old Material.—The market shows little resistance to the influences that are steadily depressing prices. Of the heavy railroad tonnage offered last week it is believed that only a moderate portion was placed. There was, at least, no eagerness displayed either by dealers or mill interests to buy. Prices this week range from 50c. to \$1 a ton lower than those of the previous week, and in face of further tonnage in sight it is not likely that even this level will be sustained unless a more active buying interest develops. A list of 1500 tons will be offered by the Chicago, Milwaukee & St. Paul on the 18th. The following quotations are per gross ton, f.o.b. Chicago:

Old Iron Rails.....	\$24.50 to \$25.00
Old Steel Rails, rerolling.....	18.00 to 18.50
Old Steel Rails, less than 3 ft.....	18.00 to 19.00
Relaying Rails, standard sections, subject to inspection.....	28.00 to 30.00
Old Car Wheels.....	23.50 to 24.00
Heavy Melting Steel Scrap.....	16.00 to 16.50
Frogs, Switches and Guards, cut apart.....	16.25 to 16.75
Mixed Steel.....	12.00 to 12.50

The following quotations are per net ton:

Iron Fish Plates.....	\$18.00 to \$18.50
Iron Car Axles.....	26.00 to 26.50
Steel Car Axles.....	20.25 to 20.75
No. 1 Railroad Wrought.....	14.75 to 15.25
No. 2 Railroad Wrought.....	13.75 to 14.25
Railway Springs.....	15.50 to 16.00
Locomotive Tires, smooth.....	17.00 to 17.50
No. 1 Dealers' Forge.....	12.50 to 13.00
Mixed Bushing.....	11.00 to 11.50
Iron Axle Turnings.....	11.25 to 11.75
Soft Steel Axle Turnings.....	11.25 to 11.75
Machine Shop Turnings.....	11.25 to 11.75
Cast Borings.....	9.75 to 10.25
Mixed Borings, &c.....	9.75 to 10.25
No. 1 Mill.....	10.00 to 10.50
No. 2 Mill.....	9.00 to 9.50
No. 1 Rollers, cut to Sheets and Rings.....	11.00 to 11.50
No. 1 Cast Scrap.....	18.25 to 18.75
Stove Plate and Light Cast Scrap.....	15.00 to 15.50
Railroad Malleable.....	17.00 to 17.50
Agricultural Malleable.....	15.50 to 16.00
Pipe and Flues.....	11.75 to 12.25

Metals.—The readjustment of Copper prices has resulted in some concessions on the part of sellers, but they have not been satisfactory in extent to satisfy demands of the trade. At least, the lower prices offered have not resulted in an active movement such as was looked for. In sympathy with Copper nearly all other metals are lower, and there is but little activity in any item of the list. We quote as follows: Casting Copper, 23c. to 23 $\frac{1}{2}$ c.; Lake, 24c. to 24 $\frac{1}{2}$ c., in car lots for prompt shipment; small lots, $\frac{1}{4}$ c. to $\frac{3}{4}$ c. higher; Pig Tin, car lots, 43c.; small lots, 43 $\frac{3}{4}$ c.; Lead, Desilverized, 5.75c. to 5.85c. for 50-ton lots; Corroding, 6.50c. to 6.60c., for 50-ton lots; in car lots, 2 $\frac{1}{4}$ c. per 100 lb. higher; Spelter, 6.62 $\frac{1}{2}$ c.; Cookson's Antimony, 20c., and other grades, 19c. to 19 $\frac{1}{2}$ c.; Sheet Zinc is \$8.60 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 20c.; Heavy Copper, 19 $\frac{1}{2}$ c.; Copper Bottoms, 17c.; Copper Clips, 18c.; Red Brass, 17 $\frac{1}{2}$ c.; Red Brass Borings, 15c.; Yellow Brass, 14 $\frac{1}{2}$ c.; Yellow Brass Borings, 13c.; Light Brass, 11c.; Lead Pipe, 5c. Tea Lead, 4.65c.; Zinc, 5c.; Pewter, No. 1, 30c.; Tin Foil, 35c.; Block Tin Pipe, 40c.

The American Association of Railway Superintendents of Bridges and Buildings will hold its annual convention for this year in Milwaukee, October 15, 16 and 17. The programme includes visits to Milwaukee Bridge Works and to the plant of the Allis-Chalmers Company.

Philadelphia.

PHILADELPHIA, PA., July 16, 1907.

The market is still in a condition of midsummer dullness, and it is not at all clear when it will take on its usual activity. Prices are uncertain, so that the trade are feeling their way along until they have some evidence that they are on fairly safe ground. Buyers will need a good deal of Iron along toward November, and sellers are just as anxious to get business for forward deliveries, but the serious question is, What sort of prices are going to rule? The great difficulty will be to decide on figures that will inspire confidence on both sides. Makers of Pig Iron believe that it would be poor policy to be over anxious for business, while they have three or four months' work on their books. Consumers take the ground that prices of raw material are too high, and as they see no prospect of getting more money for finished products they will not buy heavily until it is clear that the possibilities of lower prices are pretty well exhausted. The chances for any material decline in the immediate future, however, are not very threatening; but even a small advance is hardly taken into consideration, so that further waiting may have to be done before a satisfactory level is reached. The potential influences will be the money market and the crops, which are practically one and the same thing, as the value of the latter will determine, to a large extent, the character of the money market for some time to come.

Pig Iron.—The demand for Pig Iron has been in very marked contrast to what it was at any time within a year before the present month. Considering the enormous consumption which is maintained, buying is almost infinitesimal. A few hundred tons once in a while is reported, and occasional carloads and lots of 100 to 200 tons are taken, but anything amounting to thousands appears to be relegated to the rear. Consumers have not reached a point at which they are sufficiently interested to make much inquiry in regard to what can be done, and for similar reasons sellers are almost equally indifferent. They are ready to talk business, and, in fact, would be glad to do so, providing they found buyers who were seriously disposed to place orders; but in the absence of any demand and the absence of any pressure to sell, the market is simply left to take care of itself. In a month or six weeks from now there is little doubt that prices will have become more fully established, but no one can at this time say what they will be. If Iron begins to accumulate at furnaces, or if consumers see evidences of weakness, it will be impossible to avoid a decline, but a good deal will depend upon which side is the first to make overtures for new contracts. Buyers are somewhat soured by their experience in the early spring. Carried away by their enthusiasm, and fearing continued scarcity, they bought heavily at prices from \$2 to \$3 higher than they need pay to-day. This has shaken their confidence to some extent, although not a few still hang on to the idea that prices are not going much lower, and would probably not wait long before they renewed contracts, in case the market should put on some appearance of strength. Whether this will be realized or not remains to be seen. But for the present it is clear that the disposition on both sides is to wait until further light can be had. The statement made in last week's *Iron Age* in regard to the increased capacity which will be available before the end of the year seems to give assurance that there will be no such scarcity of Pig Iron as the country has been subject to during the past 12 or 18 months, and this, perhaps, will tend to exercise considerable influence. The practical suspension of imports—which have been at the rate of 40,000 tons a month—will help steady the market somewhat, and it is now pretty certain that imports will not be renewed probably for a very indefinite period. Sales of No. 2 X Foundry have been on the basis of from \$23.25 to \$23.75, delivered, during the third quarter, and \$22.75 to \$23 during the fourth quarter, with an apparent disposition to make liberal concessions for next year's deliveries. Gray Forge is in much larger supply than it has been for some time past, and is lower. In some cases very cheap lots have been offered, so that prices are irregular and uncertain, but \$21.75 to \$22.25 in buyers' yards would be a fair average of to-day's prices. Basic Iron is about the dullest of any of the grades, and in the absence of sales it is impossible to give definite quotations; but \$22 to \$22.75 would probably be about the prices that could be realized at this time, varying according to date for delivery. The mills still complain of delayed shipments, but they get enough to keep them going and are not disposed to make offers for new lots for forward delivery. Low Phosphorus Iron is scarce, but consumers appear to get all they want at about \$27.75 to \$28, delivered, or for furnace deliveries, \$26.50 for 0.035 and \$27 for 0.030.

Steel.—The demand for Steel seems to be in abeyance for the present, as there is little disposition on the part of consumers to do business. Orders can be placed at the same figures as last week, but it does not seem to be a question of prices so much as that buyers are disposed to finish up with present contracts before beginning on new business. Mills have a good amount of work on hand, however, so that

they are kept fully employed, at \$32.50 to \$33 for nearby deliveries of ordinary Rolling Billets and \$36 to \$38 for Forging Steel.

Ferroalloys.—Business is extremely quiet, and quotations so erratic that it is quite impossible to say what the actual conditions are. Ferromanganese was offered here this week at \$60 for the last half, while others quote several dollars more. Buyers feel some hesitancy in tying themselves up to these low-price sellers, fearing that deliveries might not be made as promised. The tone of the market in Europe is said to be stronger, and established concerns in this city are disposed to be somewhat conservative in making quotations, particularly as buyers are afraid to make contracts with houses that are not well established.

Plates.—There is not much change to report in the Plate trade. Business is rather quiet, but on the whole the incoming orders fairly match shipments from day to day. Specifications are coming in very satisfactorily, but new business is confined to small and medium sized lots, and in most cases for deliveries within the next 90 days. A good many contracts have been renewed since the first of the month, and the mills report that they are unable to see any material change in the situation, although they may not be getting as many inquiries for large lots as they did earlier in the year. Prices are steady, however, and remain as last quoted—namely:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel.....	1.85	1.00
Flange or Boiler Steel.....	1.95	2.05
Marine.....	2.20	2.25
Locomotive Firebox Steel.....	2.40	2.45
The above are base prices for ¾-in. and heavier. The following extras apply: Extra per 100 lb.		
3-16-in. thick.....		\$0.10
Nos. 7 and 8, B. W. G.....		.15
No. 9, B. W. G.....		.25
Plates over 100 to 110 in.....		.05
Plates over 110 to 115 in.....		.10
Plates over 115 to 120 in.....		.15
Plates over 120 to 125 in.....		.25
Plates over 125 to 130 in.....		.50
Plates over 130 in.....		1.00

Structural Material.—The local demand is better than it has been for several weeks, although it cannot be claimed that any large business has been done, most of the lots being for carloads up to 100 and 200 to 300 tons each. Nevertheless the mills are kept fully employed, and do not see that the situation is in any degree less favorable than it has been for some time past. Prices are steady as last quoted, viz., 1.85c. to 2c., according to specification.

Bars.—The Bar trade is somewhat sluggish, and although prices are held fairly steady, at 1.85c. for Best Refined Iron, it is very difficult to get enough business to keep the mills economically employed. Steel Bars are still scarce, and command about the same prices as Refined Iron for prompt shipment, later deliveries being a full tenth below that figure.

Sheets.—Business is not quite as brisk as it was a few weeks ago, but there is enough doing to keep the mills pretty well occupied. Prices are unchanged, and for mill shipments are about as follows, with the usual addition for broken lots: Nos. 18 to 20, 2.80c.; Nos. 22 to 24, 2.90c.; Nos. 25 to 26, 3c.; No. 27, 3.10c., and No. 28, 3.20.

Old Material.—The market is dull, but the feeling is more settled, and something near bottom prices have probably been reached, although as yet very little actual buying is being done. We quote bids and offers for deliveries in buyers' yards, as follows:

Steel Crops.....	\$17.75 to \$18.50
No. 1 Steel Scrap.....	17.50 to 18.00
Low Phosphorus.....	23.50 to 24.00
Old Steel Axles.....	20.50 to 21.00
Old Iron Axles.....	29.00 to 30.00
Old Iron Rails.....	25.00 to 25.50
Old Car Wheels.....	25.00
Choice No. 1 R. R. Wrought.....	19.00 to 19.50
No. 1 Yard Scrap.....	17.00 to 17.50
Long and Short.....	17.00
Machinery Scrap.....	19.00 to 19.50
Wrought Iron Pipe.....	15.50 to 16.00
No. 1 Forge Fire Scrap.....	16.50 to 17.00
No. 2 Light.....	9.50 to 10.00
Wrought Turnings.....	15.00 to 16.00
Stove Plate.....	16.50 to 17.00
Cast Borings.....	14.25 to 14.75
Grate Bars.....	15.50 to 16.00

Birmingham.

BIRMINGHAM, ALA., July 15, 1907.

Pig Iron.—While the business booked last week was not large as compared with sales a couple of months since, at the same time it was quite an improvement over anything done in the past few weeks. Practically all the sales were for third quarter delivery, showing conclusively that a number of melters are as yet not under cover. Inquiries, too, for this delivery are numerous, and the outlook for the remainder of the year is better than it was a short time since. Buying for fourth quarter is limited, and so far as

next year is concerned it is understood consumers are taking no interest whatever in that delivery. Quotations are now about as follows for No. 2 Iron: Third quarter, \$21 to \$21.50; fourth quarter, \$20 to \$20.50; first quarter, 1908, \$18.50. For spot shipment on the higher Foundry numbers a slight premium might be demanded, but on No. 4 Foundry, Forge and Mottled, some decidedly lower prices have been made the past week. This is due to the fact that every furnace in the district has been working badly during the extremely hot weather we have been having for a month, and all have accumulated stocks of off grade Iron. As a result, several lots of 1000 tons have been placed at a much greater differential than usually prevails between Nos. 2 and the lower grades. On the other hand, the furnaces are getting way behind on their orders for Soft Iron, and it is very likely the higher grades will command an increased premium later in the season. Several furnaces have been temporarily out of blast for the past few days, due to scarcity of Ore, but all will resume shortly.

Cast Iron Pipe.—The foundries in this district have orders on hand sufficient to keep them going for from four to five months, and are therefore somewhat independent just at the present time. The orders for small tonnage, which are constantly being received, always carry good prices, and are the most desirable business for those who are working on large contracts, as it is always possible to work these small orders to advantage along with the larger ones. While there has been an inclination on the part of one manufacturer to shade prices slightly, it is understood the other manufacturers are holding firm to the basis heretofore existing. Quotations on Water Pipe are about as follows per net ton: 4 to 6 in., \$36; 8 to 12 in., \$34; over 12 in., average \$31, with \$1 per ton extra for Gas Pipe.

Old Material.—While the Scrap market is extremely quiet, no concessions in prices have been made. At this season of the year the volume of business is necessarily less than at other times, on account of many mills and foundries closing down for repairs, but the suspension this year it is expected will be much less than usual, and the dealers are therefore holding prices which have heretofore been in effect. Quotations are approximately as follows per gross ton:

Old Iron Rails.....	\$22.00 to \$22.50
Old Iron Axles.....	18.50 to 19.00
Old Steel Axles.....	17.50 to 18.00
Old Car Wheels.....	20.50 to 21.00
No. 1 Railroad Wrought.....	18.50 to 19.00
No. 2 Railroad Wrought.....	13.00 to 13.50
No. 1 Country Wrought.....	13.00 to 13.50
No. 2 Country Wrought.....	12.00 to 12.50
Wrought Pipe and Flues.....	13.50 to 14.00
Railroad Malleable.....	14.00 to 14.50
No. 1 Steel.....	15.00 to 15.50
No. 1 Machinery Cast.....	16.50 to 17.00
Stove Plate and Light Cast.....	13.00 to 13.50
Cast Borings.....	8.50 to 9.00

Cincinnati.

FIFTH AND MAIN STS., July 17, 1907.—(By Telegraph.)

Pig Iron.—The policy of waiting for further developments which has apparently been accepted by a large number of consumers is still effective, with actual transactions for the week small and of no special significance. Iron on contracts is said to be coming forward in a satisfactory manner and very few instances are reported where shipments have been ordered discontinued or delayed. This seems to indicate that the rate of melting is being practically maintained, and at the same time shows that in general consumers are fairly well covered for some time into the third quarter of the year. The quotations of a week since still obtain, yet are perhaps more susceptible to the influences that are being brought to bear upon them growing out of the halt in buying. It looks as though most of the furnaces of the South had disposed of a fair proportion of their anticipated make of foundry grades for the balance of the year, and are making no special effort to contract into next year. These same furnaces, however, are said to have considerable Gray Forge and No. 4, which can be secured at concessions below the usual differentials. Demand for nearby or spot shipment is light, with quotations the same as for the entire third quarter. An Indiana concern is said to have bought 1000 tons of foundry grades at a shade below schedule. Northern Irons are in fair demand, with available supply limited. The freight rate from the Hanging Rock District to Cincinnati is \$1.15 and from Birmingham \$3.25. We quote for July delivery, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$24.25 to \$24.75
Southern Coke, No. 2.....	23.75 to 24.25
Southern Coke, No. 3.....	23.25 to 23.75
Southern Coke, No. 4.....	22.50 to 23.00
Southern Coke, No. 1 Soft.....	24.25 to 24.75
Southern Coke, No. 2 Soft.....	23.75 to 24.25
Southern Coke, Gray Forge.....	21.25 to 21.75
Southern Coke, Mottled.....	20.25 to 20.75
Ohio Silvery, 8 per cent. Silicon.....	30.15 to 30.65
Lake Superior Coke, No. 1.....	24.15 to 24.65
Lake Superior Coke, No. 2.....	23.65 to 24.15
Lake Superior Coke, No. 3.....	23.15 to 23.65

<i>Car Wheel Irons.</i>	
Standard Southern Car Wheels.....	\$29.00 to \$29.50
Lake Superior Car Wheels.....	27.50 to 28.00

Coke.—The market is easy; demand is fairly active, and the supply is moving forward regularly. Contract business for the present is lighter, most concerns having closed for requirements into next year. We quote the best brands of Connellsville and Virginia Foundry Coke from \$3 to \$3.25, f.o.b. ovens.

Finished Iron and Steel.—The market is feeling the effect of the midsummer season and new orders during the week have been comparatively light. Demand for Plates continues steady, with mills making deliveries in about 90 days. Prices, f.o.b. Cincinnati, are unchanged, as follows: Iron Bars, carload lots, 1.80c., with half extras; small lots from store, 2c., with full extras. Steel Bars, carload lots, 1.75c., half extras; smaller lots from store, 1.95c., with full extras. Base Angles, carload lots, 1.85c. Beams and Channels, carload lots, 1.85c., base. Plates, 1/4-in. and heavier, carload lots, 1.85c., base, and smaller lots from store, 2.25c. Sheets, No. 16, carload lots, 2.05c., and smaller lots from store, 2.60c.; No. 14, carload lots, 1.95c., and smaller lots from store, 2.50c. Steel Tire, 1 x 1/4 in. or heavier, 1.95c., in carload lots.

Old Material.—The situation is about the same as reported a week since. Some business is being done, but no special interest is manifest, and no considerable business is looked for for some time. We quote dealers' prices, f.o.b. Cincinnati, about as follows:

No. 1 R. R. Wrought, net ton.....	\$17.00 to \$17.50
Cast Borings, net ton.....	9.50 to 10.00
Steel Turnings, net ton.....	12.50 to 13.00
No. 1 Cast Scrap, net ton.....	18.00 to 18.50
Old Iron Axles, net ton.....	26.00 to 26.50
Old Iron Rails, gross ton.....	24.50 to 25.50
Old Steel Rails, long, gross ton.....	18.00 to 18.50
Relaying Rails, 56 lb. and up, gross ton.....	28.25 to 29.25
Old Car Wheels, gross ton.....	24.50 to 25.00
Low Phosphorus Scrap, gross ton.....	20.00 to 20.50

Pittsburgh.

PARK BUILDING, July 17, 1907.—(By Telegraph.)

Pig Iron.—The market is extremely quiet and shows some declining tendency. We can report two sales of Standard Bessemer, aggregating 3000 to 3500 tons, July delivery, at \$22.50, Valley; also several small lots, carloads to 100 tons, at \$22.75 to \$23. We quote Standard Bessemer in fair sized lots, July and later delivery, \$22.50; small prompt lots, \$22.75 to \$23. It appears that part of the Basic released by the Milliken failure is again offered without finding takers. We quote Basic weak at 50c. or more below Bessemer. Foundry Pig is extremely quiet. Prices are practically nominal, at \$23, Valley furnace, for July or third quarter, and \$22.50 for fourth quarter. Forge is offered at \$22 at furnace, any delivery.

Steel.—There are freer offerings of Open Hearth Billets and the market is slightly easier. We quote \$31.50 to \$32, delivered, Pittsburgh, depending on the tonnage and delivery. Bessemer Billets remain at \$30, delivered, Pittsburgh; Forging at \$34 to \$35. Sheet Bars are \$31, Pittsburgh. The Republic Iron & Steel Company's Steel mill at Youngstown resumes to-night after two weeks' repairs. Deliveries of Steel are better all around on account of the closing of a number of finishing mills for repairs. The latter are resuming now, but some of the Steel Corporation subsidiaries are closing their mills in rotation for repairs.

(By Mail.)

The whole Iron and Steel market is as dull as it possibly could be, but this dullness has made no change in the general situation, which is that furnaces and mills are well filled with business and are in nearly all instances shipping the product as fast as made. The hot weather has curtailed outputs, which are not good at either blast furnaces, Steel works or rolling mills. There is no business in Pig Iron, and prices are nominally unchanged. Open Hearth Billets are a trifle lower, while Finished Material prices are strictly held all along the line. The Carnegie Steel Company has booked the Steel for another lake vessel, making 10 it has taken from the American Ship Building Company and the Great Lakes Engineering Works for the coming season, these involving between 25,000 and 30,000 tons of Shapes, Plates and Bars. Most of these were taken within

the past four or five weeks. Railroad buying is very light, but the Burlington is in the market for 2000 cars, and the order will probably be split between two concerns.

Ferromanganese.—The market is extremely quiet, but prices are no lower. On a good sized tonnage for delivery in the later months of the year about \$58, Baltimore, or about \$60, Pittsburgh, could be done, while single carloads for prompt shipment would bring about \$65, Pittsburgh.

Muck Bar.—Nothing is being done, and the market is nominally unchanged, at \$37 to \$38, delivered, Pittsburgh, for all Pig Muck.

Skelp.—The market is quiet, as consumers are pretty well covered for the next few months. We quote for forward delivery: Grooved Steel Skelp, 1.90c. to 1.95c.; Sheared Steel Skelp, 1.90c. to 2c.; Grooved Iron Skelp, 2.20c. to 2.25c., and Sheared Iron Skelp, 2.30c. to 2.35c., these prices being f.o.b. maker's mill.

Rods.—Deliveries are a trifle easier, as some of the wire mills are closing in rotation for the usual repairs. We quote prices unchanged, at \$36.50 to \$37, Pittsburgh, for Bessemer, and \$37.50 to \$38 for Open Hearth.

Steel Rails.—Nothing new has developed in the situation since the decision to keep the interchangeable mill at Youngstown on Billets during the present quarter. Inquiry for Standard Rails is good, but business placed is quite light. The local interest sold about 1800 tons of Light Rails last week, which is fully up to its current production. We quote Light Rails as follows: \$33 to \$34 for 20 to 45 lb.; \$34 to \$35 for 16-lb., and \$35 to \$36 for 12-lb., at mill. Angle Splice Bars are held at 1.65c., and Standard Section Rails at \$28, at mill.

Plates.—As noted, the Carnegie Steel Company has taken the Plates for another lake boat, making 10 boats for next season's launching it has booked on the present movement. The Burlington is figuring on 2000 Steel cars, and the order will probably be divided between a Western and a local interest. It is expected that a regular buying movement in Steel cars will come around in due course. Otherwise the market is extremely quiet and uneventful. We quote: Tank Plates, 1/4-in. thick, 6 1/4 in. up to 100 in. wide, 1.70c. to 1.80c., base, at mills, Pittsburgh. Extras over this price are as follows:

	Extra per 100 lb.
Gauges lighter than 1/4-in. to and including 3-16-in.	
Plates on thin edges.....	\$0.10
Gauges Nos. 7 and 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 in.....	.05
Plates over 110 to 115 in.....	.10
Plates over 115 to 120 in.....	.15
Plates over 120 to 125 in.....	.25
Plates over 125 to 130 in.....	.50
Plates over 130 in.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10
Complete Circles.....	.20
Roller and Flange Steel Plates.....	.10
"A. B. M. A." and ordinary Firebox Steel Plates..	.20
Still Bottom Steel.....	.30
Marine Steel.....	.40
Shell Grade of Steel is abandoned.	

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within 10 days from date thereof, discount of 1/2 of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

Structural Material.—No large or even moderate sized contracts for fabricated material are in the market, which is very quiet in consequence. The mills are receiving their usual specifications, and on account of the extra buying caused by the stoppage of two small Eastern mills recently they are pretty well filled up. We quote: Beams and Channels, up to 15 in., 1.70c.; over 15 in., 1.80c.; Angles, 3 x 2 x 1/4 in. thick up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3 1/2 in., 1.80c.; Zees, 3 in. and larger, 1.70c.; Tees, 3 in. and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3 in. are 1.70c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets.—The mills are now able to make fairly good deliveries on Black Sheets, but are still quite behind on Galvanized. There are still some mills off for repairs, and with such hot weather outputs are not up to the normal. There are no irregularities in price worth mentioning. We quote: Blue Annealed Sheets, No. 10 gauge and heavier, 1.85c.; Nos. 11 and 12, 1.90c.; Nos. 13 and 14, 1.95c.; Nos. 15 and 16, 2.05c.; Box Annealed, Nos. 17 to 21, 2.35c.; Nos. 22 to 24, 2.40c.; Nos. 25 and 26, 2.45c.; No. 27, 2.50c.; No. 28, 2.60c.; No. 29, 2.75c.; No. 30, 2.85c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.65c.; Nos. 12 and 14, 2.75c.; Nos. 15 and 16, 2.85c.; Nos. 17 to 21, 3c.; Nos. 22 and 24, 3.15c.; Nos. 25 and 26, 3.35c.; No. 27, 3.55c.; No. 28, 3.75c.; No. 29, 4c., and No. 30, 4.25c. We quote No. 28 gauge Painted Roofing Sheets at \$1.85 per square, and Galvanized Roofing Sheets, No. 28 gauge, \$3.25 per square, for 2-in. corrugations. These prices are for carload lots, jobbers charging the usual advances.

Hoops and Bands.—The market is quiet. We quote prices unchanged as follows: Steel Hoops, 2c. and Bands for all purposes at 1.60c., base, half extras, as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of \$2 a ton being charged for less than carloads.

Tin Plate.—While the leading interest made a settlement with the Tin Plate Workers' International Protective Association of America, an organization controlling some of the jobs in the Tin houses, on July 5, giving them an 8 per cent. advance in wages, two or three of the independents have refused to sign the new scale, which became effective Tuesday of this week. The men at these plants have gone on strike. At one of the affected plants a start was made on a non-union basis, and the management expects to be running without difficulty in a few days. At another the Tin house has been closed, in expectation that the men will come back. While there was not the usual rush for spot deliveries of Tin Plate early in the summer, the market is firm, and prospects are good for heavy consumption in the second half of the year. Rumors that the leading interest has large stocks of Tin Plate are discredited; its stocks are very low for this time of year. These rumors probably arose through certain operations in the Pig Tin market. Practically full mill operations are in prospect for the next few months. We quote for third and fourth quarter delivery as follows: \$3.90 for 100-lb. Cokes, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in 10 days, on which price a rebate of 5c. a box is allowed for carload and larger lots.

Bars.—The Republic Iron & Steel Company this week started nearly all its Iron mills after a fortnight's close for repairs. Demand for Iron Bars is not overly good, but is sufficient to keep the mills in operation. We quote Iron Bars unchanged, at 1.70c. to 1.75c., delivered, Pittsburgh, according to the desirableness of the order. Specifications for Steel Bars are very good, and the leading mills are practically filled up for this year. We quote Steel Bars at 1.60c. Pittsburgh.

Spelter.—The market is as quiet as it was, and has continued to decline. We quote prompt carloads at 6.12½c., delivered, Pittsburgh, and note several sales of carload lots at this figure. There is a fair amount of inquiry for carload to 50-ton lots.

Merchant Steel.—The market continues quiet. We quote: Smooth Finished Machinery Steel, 1.85c. to 2c., depending on quality; Flat Sleigh Shoe, 1.65c. to 1.75c.; Cutter Shoe, 2.15c. to 2.20c.; Toe Calk Steel, 2.10c. to 2.15c.; Railroad Spring Steel, 1.75c. to 1.80c.; Crucible Tool Steel, 6c. to 8c., for ordinary grades, and 10c. and upward for special grades. We quote Cold Rolled Shafting at 50 per cent. off in carloads, and 45 per cent. in less than carloads, delivered in base territory.

Railroad Spikes.—The market is very quiet, but products are well sold up and prices are being well maintained. Standard Spikes are regularly quoted at \$2.20, but occasionally \$2.15 is done on a particularly desirable order. Small sizes are firming up, the usual quotation being \$2.40 to \$2.50, but occasionally \$2.35 can be done.

Merchant Pipe.—Line Pipe business appears to be over for the season. No important contracts have been taken, and there is nothing special in the market. Specifications on Merchant Pipe continue good. Discounts on Steel Pipe are as follows:

Merchant Pipe.

	Jobbers, carloads.	
	Black.	Galv.
1/4 to 1/2 in.	.65	.49
3/4 in.	.67	.53
1/2 in.	.69	.57
3/4 to 6 in.	.73	.63
7 to 12 in.	.70	.55
Extra strong, plain ends:		
1/4 to 3/4 in.	.58	.46
1/2 to 4 in.	.65	.53
4 1/2 to 8 in.	.61	.49
Double extra strong, plain ends:		
1/2 to 8 in.	.54	.43

All above discounts are subject to 1 point on the base and 5 per cent. on the net.

Official discounts on Iron Pipe, which are shaded one-half point or more to the large trade, are as follows, f.o.b. Pittsburgh:

Standard Genuine Iron Pipe.

	Black.	Galv.
3/4 to 6 in.	.67	.57
1/2 in.	.62	.50
3/4 in.	.60	.42
1/2 and 1/4 in.	.58	.42
7 to 12 in.	.62	.47
Extra Heavy Iron Pipe, Plain Ends.		
1/4, 1/2 and 3/4 in.	.62	.40
1/2 to 4 in.	.59	.47
4 1/2 to 8 in.	.55	.42

Boiler Tubes.—The market is not particularly active. Prices are well maintained. We quote:

Boiler Tubes.

	Iron.	Steel.
1 to 1 1/4 in.	.42	.47
1 1/4 to 2 1/4 in.	.42	.59
2 1/4 in.	.47	.61
2 3/4 to 5 in.	.52	.65
6 to 13 in.	.42	.59
2 1/2 in. and smaller, over 18 ft. long, 10 per cent. net extra.		
2 3/4 in. and larger, over 22 ft. long, 10 per cent. net extra.		

Iron and Steel Scrap.—The market is dead. If any business were done it would probably be on a somewhat lower basis, but thus far there is nothing on which to base a new level of values. We note one or two cases where consumers have paid dealers about 50c. a ton in order to get out of contracts, believing they will be able to buy to better advantage in the course of a month or two. The Carnegie Steel Company has taken on 3000 to 5000 tons of Melting Scrap in the past 10 days at its old price of \$18. This bid brings out more material than it did formerly. There is still considerable material, owing to the two principal consumers of Heavy Melting Scrap, but dealers find no difficulty in picking up material with which to keep up shipments. We repeat last week's quotations, noting, however, that they are practically nominal: Heavy Steel Scrap, \$18 to \$18.50, for Pittsburgh, Steubenville and Sharon delivery, prices depending on quality; No. 1 Railroad Wrought Scrap, \$18.50 to \$18.75, and No. 2, \$18 to \$18.25; Bundled Sheet Scrap, \$16.75; No. 1 Busheling Scrap, \$18 to \$18.25; No. 2 Busheling Scrap, \$15 to \$15.25; Old Steel Rails, short pieces, for Open Hearth purposes, \$18.25 to \$18.50; Old Steel Rails, rerollers, \$20; Low Phosphorus Melting Stock, \$22.50 to \$23; Cast Iron Borings, \$13.75 to \$14; Stove Plate, \$16.50 to \$16.75; Old Car Wheels, \$26 to \$26.25; Steel Axles, \$21.75 to \$22; Grate Bars, \$16.25 to \$16.50; No. 1 Cast Scrap, \$21 to \$21.50; all above prices are per gross ton, f.o.b. Pittsburgh.

Coke.—It is claimed that there is only one producer in the Connellsville region who will make a contract on either Furnace or Foundry Coke for the balance of the year, but some dealers are quite ready to make contracts at only a shade above the ruling prices for prompt Coke. Their theory probably is that so many men are off, on account of the hot weather, that later prices will ease off and they will be able to buy to advantage. There were fewer blast furnaces than usual having contracts running only to July 1. We quote strictly Connellsville Furnace Coke at \$2.40 to \$2.50 for prompt and \$2.50 to \$2.60 for contract, Standard 72-hr. Connellsville Foundry Coke being \$3 to \$3.15 for prompt and \$3 to \$3.25 for contract.

Cleveland.

CLEVELAND, OHIO, July 16, 1907.

Iron Ore.—Unusually heavy shipments of Ore have continued from the upper lake ports in the past week. July shipments are expected to exceed those of the record breaking month of June, unless labor troubles at the head of the lakes seriously interfere with the movement during the next two weeks. The trimmers on the Ore dock at Duluth, 750 in number, struck Monday for an advance of 25c. a day in wages. The dock is operated by the Duluth, Missabe & Northern Railway Company, and is one of the largest on the lakes. While a strike of any duration on this dock would seriously interfere with the movement of Ore, it is believed that the trouble will be settled very quickly. Boats have been getting good dispatch during the past week, although some delay has been caused in the movement of the vessels by heavy fogs on the lakes. Ore is still being taken in large quantities from mine stock piles, and the present indications are that these will be pretty well cleaned up by the last of July or early in August. In that case shipments are expected to be a little easier during the remainder of the season, and some of the boats may have trouble in finding cargoes. The car supply at the lower lake docks is very satisfactory at present, and the usual percentage of Ore is being forwarded direct to the furnaces. The demand for Ore has improved somewhat. There have been a number of inquiries during the week, and a few small sales of non-Bessemer Ore are reported. Ore prices remain firm, being as follows at Lake Erie docks, per gross ton: Old Range Bessemer, \$5; Mesaba Bessemer \$4.75; Old Range non-Bessemer, \$4.25; Mesaba non-Bessemer, \$4; Siliceous Bessemer, \$2.75; Siliceous non-Bessemer, \$2.35 to \$2.60.

Pig Iron.—The market is very quiet. Foundries are well supplied for the present, and there is only an occasional inquiry for a small tonnage of spot Iron. Only one interest reports any considerable activity, having booked orders for about 6000 tons in the past two weeks, for delivery in the third and fourth quarters. About half of this was Malleable Iron and the remainder Foundry Iron. There have been no further inquiries for Foundry Iron for the early months of 1908, the foundrymen being content to await developments. Some of the furnaces are working badly and not turning out their usual amount of Iron. This is attributed partly to the hot weather and partly to the lower Iron content of 1907 Ores. Foundrymen are melting their Iron as fast as received, and many of them are complaining of slow deliveries

by the furnaces. Small sales of No. 2 Foundry Iron for spot delivery are noted at \$24, at furnace, and a local furnace reports the sale of a little spot tonnage for city delivery at \$25. The maximum prices received on sales made during the week were \$23.05, at furnace, for the last quarter, for No. 2 Northern Foundry, and \$23.50 for third quarter delivery. We quote No. 2 Northern Foundry at \$23 to \$23.50, Valley furnace, for the third quarter, and \$22.50 to \$23 for the last quarter delivery. Quotations for the fourth quarter of 1907, f.o.b. Cleveland, are as follows:

Bessemer	\$23.90
Northern Foundry, No. 1.....	24.00
Northern Foundry, No. 2.....	23.50
Northern Foundry, No. 3.....	23.00
Gray Forge.....	22.00

Coke.—The market continues very quiet, with prices stationary. Foundries in this territory have pretty well covered for the balance of the year, and there are but few inquiries. Foundry Coke for the last half delivery is quoted at \$3.15 to \$3.25, at oven, although as high as \$3.50 is asked. Some of the operators are reported to have sold out for the year and to have withdrawn from the market. There is no demand for Furnace Coke.

Finished Iron and Steel.—Specifications on contracts have come in better during the past week than at the first of the month, and while not much new business was placed, orders showed some improvement. Warehouse business, which fell off heavily at the first of the month, has improved a great deal. Taken altogether the situation is regarded as satisfactory for this time of the year. Deliveries do not show much improvement yet, except in certain gauges of Sheets, and some mills report as much business on their books as ever. The American Shipbuilding Company has closed a contract for another lake freighter for 1908 delivery, and placed a contract during the week for 3200 tons of Plates for the boat. The demand for Plates has improved somewhat, and further orders for early delivery at a premium of \$2 a ton are reported. The demand for Steel Bars continues good, and some premium business has been taken at a little under warehouse prices. Specifications have come in quite heavily in the week for Structural Shapes, and some of the Structural mills are reported to be getting further behind with deliveries. The demand for Iron Bars on contracts continues fair. All prices remain firm and stationary. We quote Steel Bars for future delivery at 1.70c., Cleveland, for carload lots. Iron Bars are quoted at 1.75c. to 1.80c., Cleveland, for carload lots, with half extras, the lower price being for good sized orders. We quote Plates, $\frac{1}{4}$ in. and heavier, carload lots, 1.80c., base, Cleveland. We quote Beams and Channels, carload lots, at 1.80c., Cleveland. The warehouse price on Steel Bars is 1.95c. Iron Bars are selling at 2c., out of stock. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.30c.; No. 28, One Pass Cold Rolled, 3.05c.; No. 28, Galvanized, 4.05c. The stock price on Boiler Tubes, $2\frac{3}{4}$ to 5 in., is 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 67 per cent. discount.

Old Material.—There is absolutely no demand from consumers for any kind of Old Material. The mills are loaded up, and the fact that foundries are making no inquiries for Cast Scrap indicates that they have all they want at present. Many quotations are now merely nominal. The only activity is the purchase of Mixed Scrap by some dealers to replenish their stocks. A sharp decline is noted in bundled Tin Scrap, due to the fact, it is claimed, that some consumers have backed down on their contracts. This has resulted in the throwing on the market of more Tin Scrap than can be consumed for the present. Among the railroad offerings this week was about 1000 tons by the Big Four. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails.....	\$16.50 to \$16.75
Old Iron Rails.....	24.00 to 24.50
Steel Car Axles.....	21.50 to 22.00
Old Car Wheels.....	23.00 to 23.50
Relaying Rails, 50 lb. and over.....	29.00 to 31.00
Relaying Rails, under 50 lb.....	31.00 to 32.50
Heavy Melting Steel.....	16.00 to 16.50
Railroad Malleable.....	18.75 to 19.25
Agricultural Malleable.....	15.50
Light Bundled Sheet Scrap.....	14.50 to 15.00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles.....	\$26.00 to \$27.00
Cast Borings.....	10.25 to 10.75
Iron and Steel Turnings and Drillings.....	12.50 to 13.00
No. 1 Busheling.....	14.50 to 15.00
No. 1 Railroad Wrought.....	16.00 to 16.50
No. 1 Cast.....	19.00 to 19.50
Stove Plate.....	15.00 to 15.50
Bundled Tin Scrap.....	10.00

The United Engineering & Foundry Company, Youngstown, Ohio, has acquired several acres adjoining its plant which it intends to use for the erection of three 20-ton open hearth steel furnaces and an addition to its machine shop. It has not yet been decided when the furnaces will be built. The company has just completed a new roll casting shop, which will be equipped with machinery during the next few weeks.

The German Iron Market.

BERLIN, July 4, 1907.

The situation in the Iron trade remains involved in considerable doubt. Reports vary pretty widely in their tenor. The movement of prices, for example, is not uniform, although the tendency is mostly downward, wherever there is any variation at all. At the last meeting of the Düsseldorf Exchange Steel Bars, Sheets and Boiler Plates were all quoted 5 marks a ton lower, and a similar fall in Wrought Iron Bars was also recorded, although all Wrought Iron products had hitherto been more firmly held than those made of Soft Steel. English Foundry Iron fell 2 marks, but since then it has risen 1 mark. It is said that the Luxemburg Pig Iron Syndicate had intended a further reduction of prices in its efforts to keep out English Iron, but it made no change after seeing that the price in England had risen. At a sale of Old Material by the railroad authorities at Munich several days ago prices were lower all around than at recent sales of similar stuff in Northern, Central and Western Germany. The report adds that sales did not go off so smoothly as hitherto, since the great Steel works are only taking such lots as they have already contracted for.

The price movement, however, is not wholly downward. Both the Düsseldorf and the Siegen Pig Iron syndicates have recently raised the price at which they take Pig from the furnaces, the former by 3.50, the latter by 3 marks. While this does not mean higher prices to consumers, it increases the profits of the furnaces. The price of building and machine castings has recently been raised 1 mark per metric hundredweight in the northeastern section of the country.

From all this it will be seen that it is rather difficult to give a concise and correct diagnosis of the situation. Opinions are divergent according as one is more or less optimistic; the most acute question of the hour—namely, whether the industry is about to enter upon a period of comparative depression—still awaits an authoritative answer. Among all the conflicting statements regarding the situation two facts stand out clearly—work is still going on in nearly all departments at the full capacity of mills and furnaces, while in some branches, like crude Iron and half rolled Steel, there is still a scarcity that is often very inconvenient; but in the second place it is equally admitted that new business for remoter periods is coming in very slowly. Under these circumstances foreign market reports are being watched very closely, with the hope of finding what the outlook in the world's markets in the nearby future is likely to be. On the Stock Exchange to-day, for example, Iron shares rose several points upon the more hopeful market summary published by *The Iron Age*.

The Steel Association Report.

This week the management of the Steel Association has published its usual monthly review of the market, and it is certainly not less favorable, so far as the present employment of the mills is concerned, than the report of a month ago; but when it comes to giving indications of future conditions the report is either silent or else openly admits a slowing up of orders for remoter periods of delivery. In half rolled goods the works are stated to be fully occupied, and calls for goods already ordered are so lively that they cannot always be satisfied on time. There is also some complaint from foreign buyers of failure to ship goods promptly. It is admitted that new contracts are hardly being placed at all in half rolled material.

In Rails and other railroad Steel conditions are represented as remaining most satisfactory, and the orders hitherto booked for the current quarter far exceed the capacity of the mills. A very heavy increase in the calls for Mining Rails has recently been noted, and buyers are complaining that manufacturers are stipulating from six to eight months for filling new orders. Specifications on orders for Girder Rails for street railroads are being sent in satisfactorily, while the prospect for new orders is represented as being good, a number of electrical companies and municipalities being engaged on new construction plans. Several large foreign orders for Heavy Rails and Ties have been placed recently at good prices. Foreign business in Mining and Girder Rails keeps up well, but it is difficult and sometimes impossible to get foreign contracts, owing to the long periods of delivery demanded by the mills.

In Structural Material home consumers are requesting shipment upon contracts in a satisfactory way, but the mills cannot in all cases make shipments upon time. In this line it is admitted that hesitation in placing new contracts has increased in view of the continued stringency of the money market and the slower pace now observed in the building trades. Specifications on orders from abroad are arriving satisfactorily, but here, too, it is noted that some contracts are being lost by reason of the long terms for delivery stipulated by the mills. The amount of work on hand in Structural Material will last for three and a half to four months. The report calls attention to the fact that shipments of Steel Rails and Girders have been much hampered of late by the failure of the railroads to supply the long cars needed, the shortage of this kind of cars running some weeks as

high as 50 per cent. Much embarrassment is being caused by this delay, both for the mills and for consumers.

The Export Trade.

The above is the substance of the official report. From other sources it is learned that considerable irregularity in the export trade prevails. The United States and Canada are still in the market for Pig Iron and seem to be very much in earnest about getting it, offering pretty steep premiums for prompt delivery, which is very difficult for the furnaces to promise, owing to the heavy pressure from home consumers. The foreign demand for Hematite has fallen off perceptibly, and the market is very sensitive to all changes in the situation abroad. For several months Japan has been buying little or no Bars and Plates, or has been offering such low prices that they were not accepted. Rails and railroad material are again in active demand for India, but in other goods that country has been doing but little buying of late; shipments henceforth will doubtless be kept within lower limits than usual, owing to the fact that a rate war between German and English steamship companies has been settled and freight rates put up. Large Indian orders for Rails are in the market awaiting to be placed, but it is uncertain whether these will be given to German or to English works. There is brisk buying of Black and Galvanized Sheets for foreign account, and the same thing is true of Ship Plates. There has recently been an extraordinary demand for cutlery and similar goods from American buyers. Canada and Australia are also buying freely, but the demand from Argentine has fallen off greatly.

Production Heavy.

There is as yet no let up in the production of Pig Iron and the indications point to an increase rather than a reduction, as several new furnaces are scheduled to be blown in during the next month or two, including the big new establishment in Lübeck. The make of Pig in May was 1,094,300 tons, which was only about 5000 tons less than the record month of March, 1907. Production for the first five months of the year showed a further gain of 246,700 tons over the corresponding months of 1906. The year's production will certainly exceed 13,000,000 tons, as compared with 12,478,000 tons for 1906.

Dividends now being declared by Iron companies give evidence of the prosperous business that the companies have been doing. Nearly all recently declared dividends show good increases over last year. Thus the Hasper Eisen und Stahlwerk pays 12 per cent., as compared with 10 per cent. last year, and Aumetz-Friede, a strong company of Lorraine, raises its distribution from 8 to 12 per cent. These are examples taken at random from the news dispatches of the past few days.

Work on Pools.

Various questions of organizations for special branches of the trade are at this moment under active discussion. The Steel Association leaves it to the works to fix prices and regulate sales of all goods except Steel Rails and other railroad supplies of that class, Structural Shapes and Billets and half rolled Steel material. Hence it is of the highest importance to the manufacturers of other goods to make special combinations to prevent ruinous price cutting. The most important of such combinations would be one to cover Bars, in which the allotments fixed by the association were raised by 717,000 tons. The latter has just ordered full statistical information to be gathered in this section of the trade, with a view to bringing about an organization in it. It is feared that there will be much price cutting in Bars unless a combination is made.

The manufacturers of Wire Rods are also trying to prolong their existing combination, but serious difficulties have arisen. An increase in the allotments of these goods by 213,000 tons, as fixed by the Steel Association, makes it pretty difficult to redistribute the allotments to the individual mills in a satisfactory manner. For the present, in order to gain time for further negotiations, the old combination has been prolonged to the end of the year. The Gas and Boiler Pipe combination has been prolonged, according to newspaper reports, for five years. Difficulties between the Düsseldorf Pig Iron Syndicate, on the one part, and the Kraftwerk at Stettin and the new furnace company at Lübeck, on the other part, have arisen and remain to be adjusted. The syndicate wants to force these independent companies to join it, while they are not disposed to surrender the advantages of their independent position.

The Last Export Bonus.

At the beginning of this month the last of the drawbacks upon exported Iron and Steel products disappeared, the Steel Association having abolished its payment of 250 marks per ton upon export shipments. This action has aroused much opposition on the part of the smaller rolling mills, which are compelled to buy their Steel supplies in the market and which are mostly not connected with the association. The statements of the latter, however, indicate that the drawback will not be renewed. The reason assigned is that this payment of a bounty for the export of

Steel products has proved an obstacle to negotiating a commercial treaty with the United States.

New York.

NEW YORK, July 17, 1907.

Pig Iron.—The market has been exceedingly quiet, particularly so far as Foundry and Basic grades are concerned. There is some prospect of early dealings in Forge Iron and in Low Phosphorus Pig, for which there is some inquiry. We quote for Northern No. 1 Foundry, tidewater delivery, \$24 to \$25; No. 2 Foundry, \$23.25 to \$23.50, and for No. 2 Plain, \$22.50 to \$23. No. 2 Southern Iron is nominally \$25 to \$25.50. Middlesbrough No. 3 is quoted \$20.50 to \$21, on dock, for No. 3.

Structural Material.—The actual contracts of the week were, for the most part, of small or moderate size, the large business heretofore mentioned being still under negotiation, though the destination of the Northern Pacific bridge work is practically decided. Structural mills have found no let-up, and in some cases current orders are still in excess of shipments. The concession some fabricating companies have been making and the moderate level maintained for months in the price of Structural Steel have counteracted the effect of high level prices for other products entering into construction. It is conceded that the money situation will cut more of a figure in new building enterprises as the year advances; surprise is expressed, in fact, that it has not been more in evidence. It is noticed that less work is being figured on than was the case in the spring, but in the fall the bridge programmes of the railroads will begin to take shape, and then something will be known of the outlook for next year. In the past week the New Haven Road received bids for a Scherzer bridge and plate girder approaches for Providence, R. I., the whole amounting to about 1200 tons. Some recent orders have been booked in the East for steel piling and the tonnage in this line has been on the increase. Quotations on mill shipments, tidewater deliveries, are continued, as follows: Beams, Channels, Angles and Zees, 1.86c.; Tees, 1.90c.; Bulb Angles and Deck Beams, 2c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Sales out of stock, of material cut to length, are made at 2¼c. to 2½c.

Bars.—It is understood that in one or two cases recent shutdowns of smaller mills rolling iron have been more the result of inability to meet competition, than of the necessity for repairs. A nearer approach to the steel basis is indicated by some recent prices. While the usual range for Best Refined is 1.81c. to 1.86c. tidewater, the freight addition to the Pittsburgh basis being 0.16c., Common Refined is quoted at 1.76c. Shipments of Steel Bars are very heavy, and new business in small lots has been of fair aggregate. The Pittsburgh quotation of 1.60c. is continued, or 1.76c., tidewater, for deliveries in the last quarter. In both Iron and Steel Bars, prompt deliveries command \$2 to \$3 a ton over the prices quoted above.

Old Material.—Repair work and the hot weather are prolonging the shutdown of Eastern rolling mills, and the demand for Scrap from this source is practically eliminated. The Eastern Open Hearth works are still unwilling to receive shipments, so that the movement in Steel melting Scrap is less than in several weeks. Where any effort is made to do business it is found that buyers, whether foundries, rolling mills or Steel works, can only be interested by very considerable concessions. The market is therefore expected to drift until next month, and meanwhile is rather more favorable to the buyer. At the same time dealers, as a rule, are not attempting to force business. We continue quotations per gross ton, f.o.b. New York, as follows:

Old Girder and T Rails for Melting	\$15.25 to \$15.75
Heavy Melting Steel Scrap	15.25 to 15.75
Old Steel Rails, rerolling lengths	18.00 to 19.00
Relaying Rails	27.50 to 28.00
Old Iron Rails	23.50 to 24.00
Standard Hammered Iron Car Axles	29.00 to 29.50
Old Steel Car Axles	19.50 to 20.00
No. 1 Railroad Wrought	18.50 to 19.00
Iron Track Scrap	16.50 to 17.00
No. 1 Yard Wrought, long	16.50 to 17.00
No. 1 Yard Wrought, short	16.00 to 16.50
Light Iron	10.00 to 10.50
Cast Borings	11.50 to 12.00
Wrought Turnings	13.50 to 14.00
Wrought Pipe	13.50 to 14.00
Old Car Wheels	22.50 to 23.00
No. 1 Heavy Cast, broken up	18.00 to 18.50
Stove Plate	15.50 to 16.00
Grate Bars	13.00 to 13.50
Malleable Cast	19.50 to 20.00

Plates.—The week has been generally quiet. Demand for lighter Plates has perhaps being more pronounced. All the mills are well employed, and prices are strong. We quote for tidewater delivery as follows: Sheared Tank Plates, 1.86c. to 1.96c.; Flange Plates, 1.96c. to 2.06c.; Marine Plates, 2.26c. to 2.36c.; Fire Box Plates, 2.75c. to 3.50c., according to specifications.

Cast Iron Pipe.—The New York City purchases of last week amounted to about 1000 tons, and a continuous

run of buying for water service extensions, particularly in Brooklyn and on Staten Island, is expected. Quotations generally remain on the basis of \$34.50 to \$35 per net ton, at tidewater, for 6-in. Pipe in carload lots, with business light. The occasional attempt of small buyers to cancel orders may indicate the expectation of lower prices.

Metal Market.

NEW YORK, July 17, 1907.

Pig Tin.—Considerably more business was done in the week at constantly falling prices. Sales were made July 11 at 41.12½c., and the following day, when the largest business of the week was transacted, amounting in all to about 300 tons, at 41.10c. On July 15 further concessions were made and a small amount was sold at 40.87½c. On July 16 the price again declined to 40.55c. Sales have been made this afternoon at 40.25c. The London market is considerably easier than last week, showing a decline of £5 for spot, while futures are practically unchanged. The spot market this afternoon is held at £183 and futures at £179 15s. The backwardation which was so pronounced two weeks ago has now almost disappeared. The market in some respects is a narrow one, as there are only four sellers of Tin, one of them being the leading consuming interest, but its selling is an uncertain factor. Another of the holders is practically out of the metal, consequently the remaining ones, while holding the key to the situation, are not disposed to attempt any upward movement. The statistical position has rather improved, arrivals since the first of the month being 2380 tons, while there are afloat for American ports 2288 tons. It is believed that this market will be short of Tin during the latter part of the month unless the Minneapolis, sailing from London on July 20, brings a good cargo.

Copper.—The official cut in Copper prices to 22c. brought little or no business, and now some of the smaller companies are selling limited quantities at almost daily declining prices. Electrolytic Copper available for July delivery can be had at 20.67½c. Some sales to domestic consumers were made July 16 at 21c., but only in small amounts. There is practically no business in Lake Copper and the quotation is more or less nominal, at 21.50c. It is considered rather singular that European consumers have not purchased more metal, since they are in need of it. In this country, as has been frequently pointed out, manufacturers have considerable metal left over which was contracted for during the earlier months of the year. Speculation is rife as to the amount of metal being accumulated, but the lesson of a few years ago has doubtless sufficiently impressed itself so that this measure will not be resorted to. The hand to mouth buying from jobbers, which has been so frequently noted, has almost disappeared, and these holders report business duller than for months. Official reductions have been made in prices of various commodities, such as Wire, Sheets, Brass, averaging about 4c. per lb. The London market is again lower, but closes strong to-day at £94 for spot and £88 10s. for futures. Best Select is now £98, which, with the discount for cash off, is equivalent to 20.50c. Electrolytic is being offered in Europe at £97, c.i.f., with no buyers.

Pig Lead.—The market is again dull, but a fair tonnage was sold last week. Spot Lead in New York can be had at 5.25c., and in St. Louis at 5.12½c., which is slightly easier than last week. It is believed that a firm offer at even a lower figure in St. Louis would be accepted.

Spelter.—The excessive dullness continues, and prices are again lower. Sales have been made at 6c., St. Louis, and possibly a shade under might be accepted. Nearby shipments can be had at 6.15c., New York.

Antimony.—The market is decidedly stronger. Cable advices from Europe are to the effect that some large sales have been made there both for spot and future deliveries. Hallett's is quoted at 11¼c. to 12c.; Cookson's, 12c. to 13c.; other grades, at 10c. to 11½c.

Ferroalloys.—Sales of 50 per cent. Ferrosilicon have been made at \$107 for nearby shipments, but later deliveries can be had at \$104. Ferromanganese is unchanged, at \$63, Pittsburgh, for carloads.

Tin Plates.—An improvement in shipments has been made, but prices are without change, at \$3.90, f.o.b. Pittsburgh, and \$4.09, f.o.b. New York, for 100-lb. I. C. Coke Plates.

Old Metals.—Dealers' selling prices of Old Metals are easier. Offerings of Scrap are coming in more rapidly than dealers can take care of the stock. Selling prices for large lots are as follows:

	Cents	
Copper, Heavy Cut and Crucible.....	18.50	to 19.00
Copper, Heavy and Wire.....	18.00	to 18.50
Copper, Light and Bottoms.....	17.00	to 17.50
Brass, Heavy.....	13.50	to 13.75
Brass, Light.....	10.50	to 10.75
Heavy Machine Composition.....	17.00	to 17.50
Clean Brass Turnings.....	12.50	to 12.75
Composition Turnings.....	15.00	to 15.50
Lead, Heavy.....	4.75	
Lead, Tea.....	4.37½	
Zinc Scrap.....	5.25	

Iron and Industrial Stocks.

NEW YORK, July 17, 1907.

The reaction in the stock market which was in progress at the beginning of last week brought prices to low point on Thursday, July 11. Since that time there has been a general recovery, a number of the industrial stocks on Monday or Tuesday of this week coming within a point of the highest reached under the previous upward movement. Steel common, which touched 35¾ on Thursday, had recovered to 38¾ on Monday, July 15. In Steel preferred the range was 99 to 100¾; in Car & Foundry common, 42¾ to 44; in American Locomotive common, 57½ to 59¼; in Pressed Steel common, 34½ to 36; in Republic common, 27½ to 28¾; in Sloss-Sheffield common, 56½ to 58¾; in Colorado Fuel, 30¾ to 32¾. Last transactions up to 1.30 p.m. today are reported at the following prices: United States Steel common 37¾; United States Steel preferred 100¾; Car & Foundry common 44, preferred 100; Locomotive common 58½, preferred 104½; Steel Foundries common 7¼, preferred 41; Colorado Fuel 32½; Pressed Steel common 36, preferred 90; Railway Spring common 42; Republic common 28¼, preferred 84; Sloss-Sheffield common 57½; Tennessee Coal 140½; Cast Iron Pipe common 36¾, preferred 77; Can common 5¾, preferred 53¾.

The Midvale Steel Company, Nicetown, Philadelphia, will hold a meeting of its stockholders Thursday, July 18, to take action on an increase of the capital stock of the company from \$750,000 to \$9,750,000.

Peabody, Houghteling & Co., of Chicago, are offering \$3,500,000 5 per cent. gold mortgage bonds, of the J. I. Case Threshing Machine Company of Racine. These are dated on May 1, 1907, and mature in sums of \$300,000 per annum, on November 1, each year, to November 1, 1918, the last \$200,000 maturing on November 1, 1919. The price varies from 99¼ for the first year's maturity, to 95½ for the 1919 bonds. The average net annual earnings during the five fiscal years have been \$887,900.12.

Dividends.—The J. G. Brill Company has declared a quarterly dividend of 1¾ per cent. on the preferred stock, and 1 per cent. on the common stock.

Rolling Mill Wage Adjustment.—The bimonthly examination of realized prices on shipments of iron bars, sheets and tin plates during May and June made by the manufacturers and the Amalgamated Association, calls for no change in wage rates over the previous period, leaving sheets at 2.6 per cent. over the base, tin plate, 6 per cent. over the base, and bar iron at 1.6 cents, calling for a \$6 puddling rate.

A recent German invention is the Osram electric lamp, in which the ordinary carbon filament is replaced by fine wires of wolfram, by which means the inventor claims to reduce by 60 per cent. the power consumption of incandescent lamps. A test continued at Charlottenburg for 1000 hr. (the average life of the incandescent) showed an average loss of brilliancy of 6.3 per cent. for the 25 candlepower lamps and 3.6 per cent. for those of 32 candlepower. Of 16 lamps tested, 11 were still capable of use, being undamaged by the test and continued operation. This new lamp shares with the Osmium lamp the drawback that it can be used in only one position—hanging downward. Those in charge of the experiments state that this defect will be removed, so that the lamp can be used in all positions.

Shallow ponds of fresh water on the surface of the ocean are occasionally encountered. This segregation is believed to be due principally to the melting of icebergs, with a subsequent lack of winds and currents to cause the usual intimate mixture. A still more curious feature is that these strata of fresh water offer considerably more resistance to the passage of a ship through them than does salt water. This appears to be because the vessel in passing produces two sets of waves in the two strata, causing relative movement between them, with resultant friction and retardation of motion. Experiments have shown the plausibility of both the separate wave and the loss of headway theories to be based upon correct reasoning, for such phenomena may be readily reproduced and their effects measured.

PERSONAL.

James M. Swank, Philadelphia, whose statistical work as general manager of the American Iron and Steel Association, has covered a period of over 34 years, celebrated his seventy-sixth birthday July 12. He is in excellent health.

Milton J. Budlong has resigned as president of the Electric Vehicle Company, Hartford, Conn. Harry W. Kyte, secretary and assistant treasurer, has been elected third vice-president and made manager of the sales department. H. W. Nuckols, who has been assistant to Mr. Kyte, has been promoted to the offices of secretary and treasurer. Mr. Budlong's successor has not been chosen.

Henry S. Washington and J. Volney Lewis have opened an office at 95 Liberty street, New York, as expert specialists and consulting geologists to mining engineers.

Geo. H. Seltzer, formerly salesman and sales manager for Stanley G. Flagg & Co., Philadelphia, and late with the Enterprise Foundry Company, Garwood, N. J., has taken the position of general manager of the Armstrong Iron Works, manufacturer of small and large gray iron castings, Vineland, N. J.

The Merchant & Evans Company, Philadelphia, announces the appointment of Chas. E. Scofield as manager of its New York and Brooklyn houses, at 242 Water street, New York, and 584 Flushing avenue, Brooklyn, with W. J. A. Bolles in charge of the Brooklyn branch. Both have occupied responsible positions with the company for many years, and are fully conversant with its business and products.

A. S. Blanchard, manager of the steel casting department of the Wellman-Seaver-Morgan Company, Cleveland, Ohio, resigned July 1, to accept the position of assistant to the vice-president of the Atha Steel Casting Company, Newark, N. J.

J. D. Gallagher, first vice-president of the American Brake Shoe & Foundry Company, sailed for Europe July 10. He will return some time in August.

H. H. Hewitt, president of the Magnus Metal Company, has been elected a director of the National Copper Bank, New York.

Robert A. Hadfield of Sheffield, England, sails for home July 30.

C. T. Mason of the sales department of the Browning Engineering Company, Cleveland, Ohio, left last week for Europe on a short business trip for his company.

H. Milliken, who recently joined the engineering staff of W. S. Barstow & Co., 50 Pine street, New York, has left for their Portland, Ore., office, where he will be permanently located as resident electrical engineer. For the last two years he has been connected with the operating department of the New York Edison Company.

Benjamin Talbot has been elected managing director of the Cargo Fleet Iron Company, Limited, Middlesbrough, England, succeeding C. J. Bagley, who recently resigned.

A. M. Stillman has sailed for England, to represent the Universal Machine Screw Company of Hartford, Conn.

William T. Shepard of Rogers, Brown & Co., Buffalo, N. Y., was elected a director of the Buffalo & Susquehanna Iron Company, Buffalo, last week, to succeed the late Frank H. Goodyear. Stephen M. Clement was elected first vice-president, succeeding Mr. Goodyear, and Charles W. Goodyear was elected second vice-president. The other officers remain as before: William A. Rogers, president; Hugh Kennedy, general manager, and H. D. Carson, secretary and treasurer.

W. E. Corey, president of the United States Steel Corporation, is expected to arrive by the Savoie on Saturday, the 20th inst.

John F. Carney, for many years connected with the selling department of the McCrum-Howell Company, but for the past year manager of the heating department of the Barstow Stove Company, Providence, R. I., has ac-

cepted the position of manager of the eastern branch of the National Regulator Company, manufacturer of heat regulating devices, with offices at 1135 Broadway, New York.

The Jones & Laughlin Ore Dust Case.

A decree was made by Judge James S. Young in Common Pleas Court No. 2 at Pittsburgh, July 12, against the officers and directors of the Jones & Laughlin Steel Company, and is a further step in the litigation growing out of the emission of ore dust from the Eliza furnaces of the company. The officers were held to be in contempt of court in continuing to operate their blast furnaces without preventing the deposit of ore dust upon property in adjacent districts. Fines were imposed in the following amounts: \$5000 on B. F. Jones, Jr., president of the company, and \$100 each upon Willis L. King, vice-president; William L. Jones, general manager; William C. Moreland, secretary and treasurer, and Henry S. Kiehl, W. W. Willock, James B. Laughlin and George M. Laughlin, directors, and E. L. Messler, furnace superintendent. The defendants have taken an appeal to the Supreme Court of Pennsylvania and this acts as a writ of superseas, the operation of the furnaces continuing meantime.

The original suit was started in 1904 by residents of the Oakland District, Pittsburgh, and was brought in the name of E. R. Sullivan and wife, after months of agitation. It was shown that the winds carried ore dust from the Eliza furnaces into the houses of Oakland residents and caused damage to furnishings. A decree was finally rendered, ordering the abatement of what was held to be a nuisance. The case went through all the courts of the State and an injunction was issued against the company forbidding the operation of its furnaces in such a way as to emit ore dust. Large outlays have been made by the company in the effort to remedy the trouble and the discharge of dust has been lessened. The judge in his decision last week held that this was not enough, saying:

We have no discretion in deciding this question. The Appellate Court has decided the question and by its decree declared that these defendants should not do the things which they have heretofore done, and which the evidence shows they are still doing. If they cannot obey the decree and operate their works they must cease to operate them until they can secure a modification of the decree.

On behalf of the company it was denied that it was in contempt of court, since it had made every effort to comply with the original decree. Concerning this defense the following comment was made by Judge Young:

We must conclude that the injury which it was intended to prevent by this decree under the words, "working and causing injury to the property of the plaintiff," means the injury resulting from the casting out of ore dust upon complainant's property and that the effect is not only annoying but injurious.

From the admissions of the answer and the evidence we must conclude that ore dust does, from time to time, escape from Eliza furnaces. We must also conclude that large quantities of ore dust escaped while experiments were being made in an effort to prevent the escape of the ore dust, but the evidence shows that, when the furnaces were being operated in the ordinary and usual way, there have been escapes of clouds of ore dust from the furnaces.

The evidence conclusively shows that the defendants have persistently and frequently, both day and night, so operated their four old furnaces and a fifth new furnace, since the granting of the injunction, as to cause clouds of dust to be emitted therefrom. The evidence also shows that the effect of the ore dust is not only annoying but injurious to property.

A careful consideration of the evidence leads to the conclusion that the clouds are not so frequent and the quantities of dust escaping not so great. This is the sole defense. The evidence in this case shows most conclusively that neither trouble nor expense has been spared by the defendants to prevent the escape of ore dust, and for this purpose \$285,000 has been spent, and in addition the company has lost over \$200,000 in shutting down furnaces to make experiments. We are satisfied that the defendants have made every effort to comply with the decree. It is insisted by counsel for the defendants that these efforts are conclusive evidence that the defendants have not violated the spirit of the decree and therefore could not be attached for contempt. We cannot agree with the position that this is a good answer to the charge that the decree has been violated.

Of the four new furnaces the company is building at Aliquippa, Pa., one may be ready for operation early in

1908, but, as President Jones explained in an interview, the Aliquippa plant is to supply pig iron needed over and above present production. President Jones said that if the decision of the court stands it means that the Eliza furnaces cannot be operated where they are and that if the furnaces stop it will mean the stopping of the South Side mills dependent upon them. If the decision is finally upheld it would doubtless mean that other blast furnaces in Pittsburgh will be interfered with, since no method has yet been discovered by which such operations can be carried on without the emission of a certain amount of dust. Dustless and smokeless conditions can no doubt be obtained at such centers if the community is willing to sacrifice industries.

Mineral Exploration in Canada.

TORONTO, July 12, 1907.—Of Canada's mineral resources the knowledge is certain to be very greatly increased in the next few years. In nothing do the governments of the older provinces show the spirit of progressiveness more than in their activity to bring to light new deposits. Their enterprise in this respect is intensified by the emulation that it is producing. Until quite recently British Columbia surpassed every other province in the value of its annual mine output. That leadership is now challenged by Ontario. Quebec also has great mineral areas, whose possibilities are now being explored by its Mines Department as they never were before. Nova Scotia, whose coal production is of very great volume, may be said almost literally to be leaving no stone unturned to find out more about its underground wealth.

Besides the rivalry roused among the provinces that own all the Crown lands within their borders, there is the desire to obtain a counter attraction, to overcome, if possible, the lure of the interior West. The Maritime Provinces and Ontario have been heavy losers of inhabitants to the provinces in the prairie country. Every year thousands of the very flower of the farming population of the East leave to make homes for themselves in Manitoba, Saskatchewan and Alberta. This drain of the young and vigorous blood of the older provinces to the lands of the West has given the provincial governments of eastern Canada a new problem of domestic policy. It unquestionably has had something to do with the increased study these governments have been giving to the natural resources of their respective provinces.

Railroad Building Helps Ore Discoveries.

Another impulse to the extension of knowledge concerning Canada's mineral wealth is that originated by the building of the National Transcontinental Railway. As Ontario owes the discovery of its rich Cobalt silver field to the running of the Provincial Government's railroad line into the wilds of the Nipissing District, so Canada may be indebted for the uncovering of important mineral bodies to the running of the Dominion Government line through the hinterland of the present settled area. As the road from Moncton in New Brunswick to Winnipeg in Manitoba is being built by the Government, it may be supposed that, with the great means at its command, the Government will not neglect to learn something about the potential traffic resources of the country traversed by its line. It has at its service for this purpose the invaluable agency of the Geological Survey, several members of whose staff have been working along the proposed line of the railroad. Indeed, before Parliament sanctioned the new transcontinental project the Geological Survey was in possession of a great fund of information as to the mineral promise of the zone in which the railroad was run. This information was compiled and submitted to Parliament in a single volume. Irrespective of the Government's motives for emphasizing the latent riches of the route, and, apart from the showing of the volume referred to, there are abundant proofs that the northern Quebec and northern Ontario sections of the line cut across areas that are highly mineralized. The reports of surveyors encourage the belief that there

will be great mining developments along the line of the completed railroad.

The New Department of Mines.

A third influence that must operate strongly for the promotion of mineral production is the new Department of Mines, which has been added to the Dominion Government. It is somewhat surprising that this Department was not created long ago, for its field of usefulness has for years been apparent. Not to speak of the work it could do in co-operation with the mining bureaus or departments of the various provinces, there was waiting for it the great interior in which no provincial government existed. Nor, now that two large provinces have been carved out of that interior is the need for federal administration of the mineral resources there less than it was before, for the public lands in the new provinces of Alberta and Saskatchewan, as well as in Manitoba, remain under the jurisdiction and at the disposal of the Dominion Government. Some years ago the first step was taken toward providing for the Government's duty in relation to the mineral possibilities of the interior by the appointment of a superintendent of mines, as an official of the Interior Department. Some months ago a portfolio of mines was created, and Senator Templeman of Victoria, British Columbia, was put at its head. A. P. Low, who continues to hold the office of Director of the Geological Survey, was chosen as Deputy Minister of Mines, and Dr. Eugene Haanel is Superintendent of Mines. It is understood that there is to be a vigorous policy adopted and carried out by the new Minister and his able coadjutors. For some years the Geological Survey's work has been directed largely toward economic and practical objects, for the reason that there was no branch or department of Government to attend to such aspects of the country's geological structure. The Survey will now be relieved of a great part of that work, which can be done with more purpose and effectiveness by the new department.

In the past Nova Scotia was supposed to fare better than other provinces as a result of the Dominion Government's interest in mineral matters. Both under Conservative and Liberal rule the Finance ministers during the last 30 years have been men from the Maritime Provinces. The duty on coal and the duties and bounties on iron and steel benefited Nova Scotia very materially. As the Minister of Mines is a resident of British Columbia, there are expectations in that province of special attention to its mineral wealth. It is improbable, however, that there will be any sectional partiality.

E. Lindeman, a Swedish iron expert, who is now on the staff of the Department of Mines, is investigating iron ore deposits on Vancouver Island. Sooke, Port Renfrew, Santa, Quatsino, Texata and other localities on the island are to be visited. A magnetometric survey is to be made to ascertain the extent of the magnetite deposits. The information collected is to be reported to Ottawa, and made available as soon as possible to intending investors or exploiters. This is a specimen of a kind of work that is proposed to be done by the new Department. It will collect and place at the disposal of all concerned facts about mineral deposits in various parts of the country.

C. A. C. J.

On the behavior of concrete under pressure some interesting tests have been made at Columbia University. Columns were made by filling steel tubes, 4 in. in diameter and 1 ft. long, with crushed stone concrete and cement, which was allowed to set. The steel tubes had a thickness of from $\frac{1}{8}$ to $\frac{1}{4}$ in. The columns were subjected to compression loads of 120,000 and 150,000 lb. The thinner tubes began to show deformation at the lower load, but the tests were carried on to the higher figure, when, in some cases, the lengths of the columns had decreased $3\frac{1}{2}$ in., or 30 per cent., with a corresponding increase in the diameter from 4 to about 5 in. On cutting through the columns the concrete was found to perfectly fill the distorted tube, being as compact and solid and perfect as any good concrete, showing that it had flowed under pressure, like a plastic material. The pressure per square inch of original section at the higher load figures out as 12,500 lb.

The Machinery Trade.

NEW YORK, July 17, 1907.

Reports from machinery houses in this section indicate an increasing demand for machine tools and a feeling of confidence in the continuation for some time of the present good business. A few weeks ago business fell off to a marked degree, and it was thought at that time that the lull was the forerunner of a gradual settling of trade to a quiet level for the summer; but, contrary to the general expectation, business developed an upward trend and buyers came into the market more freely. While there has been a marked decrease in the construction of new plants and additions, it is evident from the number of inquiries and orders received lately that manufacturers intend to continue to increase their capacities by the installation of additional mechanical equipment. During the past week business was quite active, a good volume of both orders and inquiries being received. The demand for heavy tools seems to be especially good. Manufacturers of this latter class of machinery are booked so far ahead that dealers find it difficult to secure machines to sell. As a consequence some dealers are confining themselves to the sale of the medium sized and lighter tools.

The manager of the New York branch of a machine tool house, in comparing his June business with the records of the preceding few years, found that while last month's business fell a little short of the record for June of 1906, it was in excess of that done in the corresponding months of 1904 and 1905. For the several years previous to last season dealers always expected business to be dull during the summer months, and after such a season of prosperity find it hard to reconcile themselves to a slight lull in the demand. As the party mentioned here puts it, trade in general has been so especially good that many machinery men have gotten out of the habit of hustling very hard for business, as they have for the last two years or so had all they could do to take care of the business that has come in to them. Summed up, the demand now is somewhat slacker than during the previous few months, but as compared with other years is very good.

An indication that manufacturers are busier than usual at this time of the year is contained in the fact that many firms who have made the practice of closing down for a week or so during July or August, for the purpose of taking stock, have decided that it will be impracticable this year, and many of them have made arrangements to close only one or two days, while others are doing the best they can toward making up their annual inventories without closing their works at all. This is the case with many hardware and small machinery manufacturers in the East, according to a man in the machinery trade who has made numerous visits in that line recently. Most of those he visited did not close down for stock taking last summer either, but it has been their practice for many years previous, while many who have until this year given over a week to this work are arranging to dispose of it in three or four days.

Delaware, Lackawanna and Western Railroad.

It will not be long before the Delaware, Lackawanna & Western Railroad begins purchasing for shops in course of construction at Scranton, Pa., where the company will eventually spend \$2,000,000 or more in constructing and fitting up a railroad plant. Representatives of the company's engineering department visited the trade this week with the view of preparing a list of the equipment, which it is expected will be sent out shortly. The requirements will include the machinery needed for a blacksmith shop, foundry and pattern storage building now under way. The list of equipment for the blacksmith shop alone will be necessarily large, as the structure will be 125 x 300 ft. It will include shears, forging machines, upsetters, bulldozers and a general line of such equipment. The foundry will be 125 x 400 ft., and the pattern shop and pattern storage building 50 x 300 ft. It is stated that these buildings will be finished by next spring at the latest, and it is expected to have them in operation no later than next May. Work will then be begun on an erecting, machine, boiler and tank shop, a main repair shop and other structures, all of which will go to make up one of the largest plants of this kind in the country. No orders were placed by the company's representatives who visited the trade in New York this week, as they came to get general information to assist in making up the list of requirements. The business will be placed from the Scranton shops.

The New York Central & Hudson River Railroad is asking for bids on a 100-ton six-motor electric traveling crane for installation at the company's Depew shops. The

crane is being put in to meet certain shop conditions and to replace some equipment now in use.

A good sized list of machine tools and other equipment has been sent out by the Sirocco Engineering Company, 138-140 Cedar street, New York, manufacturer of Sirocco centrifugal fans and other machinery. This machinery is required for equipping its new plant at Green Island, Troy, N. Y. As has been stated in these columns, the company has purchased an existing plant, which it is overhauling. The equipment on which the company is asking bids is desired at an early date, as it is hoped to have the new plant in operation by August 1.

The John Inglis Company, Toronto, Ont., is about ready to buy considerable new machinery for equipping its new buildings now in course of construction. These include a machine shop, 100 x 225 ft.; blacksmith shop and pattern storage building, 42 x 100 ft. The company has not prepared specifications for the new machinery it will require, but the following list about covers the machinery it will purchase: One 6-ft. boring mill, one 6-ft. radial drill, two 30-in. engine lathes, with 16-ft. bed; two 24-in. engine lathes, with 14-ft. bed; one 24-in. slotter, one 36-in. turret lathe, one 10-ton locomotive crane, one large hydraulic flanging press for the boiler shop and several motors. The company has placed an order with Pawling & Harnischfeger, Milwaukee, Wis., for one 25-ton crane, with 60-ft. span, and one 10-ton crane, with 40-ft. span.

Within the past few months plans have been prepared for the erection of a number of new cement plants and additions to those in operation, and manufacturers of cement mill machinery have experienced a very good demand for their product. Among those which are to enlarge their capacity considerably, and to which we have referred before, is the Crescent Portland Cement Company, Wampum, Pa., which intends to build a new mill. It was expected that the company would be ready to purchase the equipment some time ago, but owing to the several changes made in the plans it is only now about ready to take up the matter, and expects to have the specifications for its equipment completed within the next two weeks.

W. Cullen Morris, engineer of construction of the Astoria Light, Heat & Power Company, 4 Irving place, New York, has inquiries in the market for the equipment of the machine shop to be built by the company which was mentioned in these columns last week. The requirements include a number of light machine tools, and a 25-ton four-motor 47-ft. span traveling crane, with 5-ton auxiliary hoist.

The Stewart-Kerbaugh-Shanley Company has been formed, with \$100,000 capital, to bid on large contracting work. The company expects to put in bids on the State canal construction work and on the New York City water works, as well as other large projects. Offices have been opened in the Day & Night Bank Building. The interests of the new company will be closely allied with those of James M. Stewart & Co., 135 Broadway; H. S. Kerbaugh Company, Philadelphia, Pa., and B. M. Shanley's Sons Company, Newark, N. J.

The Superintendent of Public Works, Albany, N. Y., will receive bids until July 31 for additional work on the Erie Barge Canal, including contract No. 12, for the excavation of the canal, construction of lock No. 23 and appertaining structures, bridges, abutments and bridge approaches at the west end of Oneida Lake, &c.; contract No. 14, for dredging a channel in the Mohawk River, constructing dam No. 2 below Crescent Aqueduct, dam No. 3 and lock No. 7 above Fischer's Ferry, dam No. 9 and lock No. 13 at Yosts, dam No. 10 and lock No. 14 at Canajoharie, dam No. 11 and lock No. 15 at Fort Plain, &c.; contract No. 35, for excavating a section of the Oswego Canal and protecting the sides, constructing locks Nos. 7 and 8, bulkheads, culverts, spillways, &c.

Chicago Machinery Market.

CHICAGO, ILL., July 16, 1907.

The condition of trade in tools and machinery, since the entrance of the midyear turn, has not been of a kind to arouse much enthusiasm. The large requirements embodied in railroad lists and plant equipments, that earlier in the season occupied the attention of dealers and manufacturers, are now conspicuously absent. Pick-up orders, which now constitute the bulk of current business, are fairly plentiful. The monthly ledger sales accounts still represent high tide prosperity, for the reason that shipments on the large orders taken months ago are now being made. While the actual amount of business done in June was probably, on the average, considerably less than for the same period last year, yet measured by ledger totals it, in many cases, is reported to have exceeded those phenomenal records. It has been many months since anything like a fair assortment of new machine tools, including lathes, planers, shapers and millers, has been seen on the floors along machinery row, but

within the past two weeks considerable improvement in this respect is observed. It is evident that stock shipments no longer go out as fast as they arrive. Boiler shops, though busy on forward contracts, note a decline in new business being offered, and less work is coming up for figures. It seems probable that with the quieter tendency now generally prevalent no great activity is likely in any of the machinery lines for a couple of months or more. By that time back orders ought to be fairly well cleaned up, except, perhaps, in some of the more congested branches of machine tools, and a more inviting basis of deliveries offered to buyers.

Important Machinery Requirements for Manual Training School.

The following list of tools, representing the installation designed for the Lyman Trumbull Manual Training High School, Chicago, reference to which was made in these columns on June 6, comes at an opportune time to command the full attention of machinery interests. Usually the requirements of the manual training schools include only light, inexpensive tools, and are not eagerly sought by dealers. In this instance, however, it will be noticed that there are a large number of engine lathes and other machines which would do credit to the equipment of a modern factory of large size. It is stated that for size and excellence of its equipment this school when completed will rank with the largest institutions of like character.

Machine Shop.—Forty-eight 14 in. by 6 ft. engine lathes; one square arbor lathe; four 12-in. swing hand lathes; three 18 in. by 9 ft. lathes; one 24-in. engine lathe; one 14-in. sensitive drill No. 4; one 20-in. drill; one No. 1C, wet grinder; one No. 0, $\frac{1}{2}$ x $1\frac{3}{4}$ in. automatic screw machine; one No. 1 universal grinding machine, 8 x 24 in.; one No. $1\frac{1}{2}$ 24 x 7 x 19 in. plain milling machine; one No. 4 42 x 12 x 20 in. plain milling machine; one No. $1\frac{1}{2}$ 20 x 7 x 18 in. small universal milling machine; one No. 4 $33\frac{1}{2}$ x $9\frac{1}{2}$ x 19 in. large universal milling machine; two 16-in. heavy duty back geared crank shapers; one 24-in. back geared crank shaper; one 6-in. crank slotter; one No. 2 wet tool grinder; two grindstones, with permanent legs; one dry grinder; one $1\frac{1}{4}$ -in. self oiling grinder; one arbor press; one 26-in. planer, independent motor drive; one 36-in. heavy planer, independent motor drive; one 42-in. boring and turning mill, independent motor drive; one standard universal radial drill; one 14 in. by 8 ft. lathe, motor driven; one tool grinder, single wheel, motor driven; two 14-in. heavy duty back geared crank shapers; one tool grinder, single wheel, belt driven; one grindstone, with permanent legs; one 3-spindle sensitive drill; one Star back saw machine; one tool grinder, single wheel, belt driven; one cutting off machine; one smoothing planer, 30 in., single surfacer; one saw bench; one medium weight cup wheel knife grinder.

Electrical Construction Shop.—Three 12 in. by 5 ft. swing engine lathes; one 12 in. by 5 ft. swing engine lathe, with turret head; one 14-in. heavy duty back geared crank shaper; one No. $1\frac{1}{2}$ 20 x 7 x 18 in. small universal milling machine; one back saw machine, 12 in.; one $1\frac{1}{4}$ -in. self oiling grinder; one grindstone, with permanent legs; one 14-in. swing sensitive drill No. 4; one 3-spindle sensitive drill; one 14-in. swing sensitive drill No. 4; one 12-in. by 5 ft. engine lathe, motor driven.

Woodworking Machine Room.—One saw table; one smoothing planer, 30 in., single surfacer; two band saws, 36 in.; one hand planer and jointer, width of knife, 16 in.; one vertical boring machine; one saw table; one band saw, 36 in.; four grindstones, with permanent legs; one tool grinder, single wheel, motor driven; twenty-four 12-in. speed lathes, 4 ft. bed; one grindstone, with permanent legs; one tool grinder, single wheel, belt driven; one improved saw table; one band saw, 36 in.; one 12 in. 4 ft. bed speed lathe, extended legs.

Pattern Shop.—One band saw, 36 in.; six 12 x 36 in. speed lathes; two standard patternmakers' lathes, 7 x 3 ft. by 10 in.; one saw table; one wood trimmer; one grindstone, with permanent legs; one 12 x 36 in. speed lathe, extended legs.

Foundry and Forge Shop.—One electric motor grinding and polishing machine; one electric motor polishing machine; one 15-in. drill press, motor driven; forty-eight forges; two 15-in. drill presses, motor driven; two electric motor grinding machines; one No. 1 single punch and shear; one 250-lb. single frame steam hammer.

Developments in the Far West furnish evidence of rapid industrial growth, instances of which are especially plentiful among the iron and steel working interests of the Pacific Coast. In line with the general trend in this direction, is the information that the Commercial Street Boiler Works, Seattle, Wash., is largely increasing its capacity by the installation of modern boiler shop tools. This equipment includes a hydraulic riveter of large capacity, together with accumulator and other accessories, flange machine, power shears, punches, &c. J. H. Fox of this company is now in the East for the purpose of purchasing this equipment.

The Vilter Mfg. Company, Milwaukee, manufacturer of Corliss engines and ice making machinery, has recently closed a contract for two large ice machines for the Japanese Government. The deal was closed with two personal representatives of the government, who visited Milwaukee for that purpose.

Geo. H. Lee & Co., Omaha, Neb., have in contemplation the erection of a six-story foundry and warehouse, plans for which are not fully developed. The foundry, it is stated, will be equipped throughout with new machinery.

The American Engineering & Construction Company, engineer and contractor, 112 Clark street, Chicago, has been recently organized. The officers are Walter A. Shaw, president; James M. Corbett, secretary; Joseph E. Bidwill, treasurer. Mr. Shaw was until recently acting city engineer in the water service department of Chicago. One of the first contracts taken by the new company was for the construction of the caisson foundations for the new Lake View pumping station building, to be erected on the north lake shore at Montrose and Clarendon avenues. Its bid, which was the lowest offered for this work, was \$89,400, while the highest bid was \$140,000. The foundation pillars, 66 in number, will be made of concrete, 5 ft. in diameter and 30 ft. deep. The superstructure, plans for which are yet incomplete, will be 72 x 175 ft., and is designed to accommodate four pumps, each having 25,000,000 gal. capacity in 24 hours. Only one of these will be installed upon completion of the building. This unit, which is of the triple expansion vertical type, will be furnished by Allis-Chalmers Company, Milwaukee. The remaining three units will be selected and installed as required. The plans contemplate the conversion of the present pumping station into a boiler house. The present boiler equipment, which consists of three internally fired Scotch marine boilers of 100 lb. pressure, will be used temporarily, but it is probable that higher pressure units will be required for the operation of the new pumps.

Cleveland Machinery Market.

CLEVELAND, OHIO, July 16, 1907.

The machine tool market is very good for this time of the year. Dealers report that their sales so far this month have been fully up to the average of July, and they are looking for a fairly good business during the remainder of the month. A number of orders have been placed with the local dealers during the past week for single tools for immediate delivery out of stock. Inquiries are mostly confined to medium sized single tools for additional shop equipment for quick delivery. There is little demand at present for tools for future delivery. Dealers have larger stocks of tools on hand at present than they have had for some time, but they are still complaining about deliveries, some of the tools just delivered to replenish stocks having been ordered before the first of the year. Deliveries on shapers are a little better, but dealers say that they have to wait as long as ever for planers, milling machines and drills. Deliveries on lathes can now be secured in from 60 to 120 days. The demand for second-hand tools is good, but they are still very scarce. Owing to the high prices prevailing at present, shops are not disposed to replace their old tools with new ones as long as the former are in shape to turn out the work.

An important change has taken place in the Bettcher Mfg. Company, manufacturer of washers, nuts and rivets, with a plant on Clark avenue. J. G. Bettcher has sold his interest in the company and has retired. J. C. Boyton, who for a number of years has been connected with the Palmer & De Mooy Foundry Company, has acquired an interest in the company and is now its secretary and manager. H. B. Ranney, superintendent of the American Shipbuilding Company, who has been president of the company, continues as president, and on August 1 will sever his connection with the shipbuilding company to devote all his time to the Bettcher Company. Under the plans of the new management a more aggressive policy will be adopted, and the plant will be enlarged to about three times its present capacity. Some of the extensions are already under way and others will be started as soon as possible. The company has ordered some new machinery, and expects to be in the market soon for additional presses and other equipment. Mr. Bettcher has organized a new company, under the name of the Cleveland Wrought Washer Company, and will erect a new plant at once for the manufacture of washers. The company is located at present in a temporary plant at Willey and Walworth streets. It has already placed orders for some presses and shears and other tools for its new plant.

The Ohio Ceramic Engineering Company has just completed a new and up to date plant on Berea road. This company had about finished the erection of an addition to its plant last February, when practically the entire plant, with the exception of the power house, was wiped out by flames.

The erection of the new plant was started at once on the same site. The main building is in the shape of an L, one section, 90 x 315 ft., being used as the mixer and car department, and the other section, 90 x 180 ft., being used as the machine shop. The plant is one story high, of reinforced concrete and brick construction. A second story has been added to another building that was rebuilt. This will be used for patterns and storage. The new plant gives the company 5000 sq. ft. more of floor space than it had in the old plant. Three new lathes, two large punching presses, a shaper, slitting shear, alligator shear, pneumatic riveter, two electric cranes, one of 5 tons and the other of 2 tons capacity, and two new forges have been installed. The machinery will be motor driven in groups. The additional motor equipment includes one 25, one 20, one 15 and one 10 hp. motor. The plant is well filled with orders, the company reporting a heavy demand for its industrial cars for brick and cement plants and for other purposes.

The Gaeth Automobile Company has been incorporated, with a capital stock of \$100,000, by Paul Gaeth, F. L. Pierce, F. G. Howe, R. H. Dyer and William F. Kees, to take over the automobile factory that has been operated on West Twenty-fifth street under the name of the Gaeth Automobile Works. It is understood that the company was formed for the purpose of making large additions to the present plant, but it is not yet ready to announce its plans.

To accommodate its growing business the Strong, Carlisle & Hammond Company, dealer in machine tools and manufacturers' supplies, is preparing plans for a large warehouse which it will erect on Scranton road. The building will be 100 x 200 ft., two stories high, and will have a railroad siding running onto the first floor. A portion of the building will be used for the manufacture of gas furnaces which the company recently placed on the market.

The Cleveland Feed Water Regulator Company was incorporated a few days ago, with a capital stock of \$10,000, by William P. Champney, Robert Manning, William Anston, George B. Shepard and Charles A. Akers, who are connected with the Eberhart Mfg. Company. The new company will develop and place on the market a new feed water regulator. If the regulator proves a success the company may decide later to build a plant for its manufacture.

The Ohio Brass & Iron Mfg. Company, Columbus, Ohio, formerly the Safety Meter Lock Company, is installing equipment for its new brass foundry, which will be ready for operation in a short time. The company has already received a large number of orders from automobile manufacturers and other users of brass castings. Iron castings and several lines of specialties will also be manufactured.

Philadelphia Machinery Market.

PHILADELPHIA, PA., July 16, 1907.

Conditions in the local machinery market show but little change, though the business transacted last week was probably less than that for the preceding one. Midsummer dullness seems to pervade all branches of the trade, and unusual quietness is to be noted on all sides. Dealers report a falling off in inquiries last week; in some cases the demand was less active than has been the case for many months. Manufacturers, however, note a fair demand, considering the season. There appears to be nothing to change the general opinion that the summer trade will be rather dull, although it is generally anticipated that business will develop more activity in the early fall months. Buying just now appears to be confined to scattered sales of single tools, and mostly those of the medium and smaller types. It is considered, however, in view of future business, that some good buying must ultimately be done. Industrial plants have been operated at the highest productive capacity for a long time, and tools driven continuously to their limit are not as long-lived as those driven moderately, and will in many cases have to be replaced. The railroads in this territory, which have been meager buyers of machine tools for some time, will, it is expected, come into the market for tools for replacement and minor extension, if not for general extension and equipment of new shops, which appear to be held up for the time. Much of this business will, it is expected, be deferred until later in the year, and while conditions to-day are not most flattering from the standpoint of new business during the summer months, it is expected that enough will develop during the fall months to more than make up for the summer dullness.

Manufacturers do not feel the present inactive conditions as do the machine tool merchants. In almost every case tool builders are booked well ahead, having orders covering their production for the next three months, and in some cases for the balance of the year, while in instances deliveries cannot be made on some tools until well into 1908. It seems impossible to catch up on some lines and sizes of tools, and deliveries on these do not improve greatly. In other cases manufacturers have bettered

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deliveries to some extent, but as a rule it is not on the desirable tools that this has been the case.

The demand for second-hand machine tools is practically the same as that for the new ones. Business is rather quiet, and such as is being transacted is confined largely to the smaller tools. The lessening demand has made better deliveries possible on quite a few grades and sizes of second-hand tools, which have for a time been rather hard to get promptly. Second-hand boilers and engines continue in fairly good demand, particularly boilers of the medium horsepowers. That for new boilers and engines is rather quiet. New business in some instances is being temporarily held up. Engine builders and boiler makers, however, have a good volume of business on their books and keep actively engaged.

Some branches of the foundry trade are probably not as active as they were, or are at least are catching up on the business in hand to some extent, this being the case particularly with some of the jobbing foundries. Steel casting plants continue actively engaged, and new business for future delivery is said to be coming in. Machinery castings are said to be in somewhat better supply, although some foundries find it difficult to take work of that character for early delivery.

The City Council of Gloucester City, N. J., will receive proposals until Thursday, August 1, for the furnishing and complete installation of a low service 3,000,000-gallon horizontal direct acting duplex compound brass fitted condensing steam pumping engine. Specifications may be obtained on application at the office of George C. Wynkoop, City Clerk, City Hall, Gloucester City, N. J.

Bids will be asked in the near future by the city of Philadelphia for construction and extensive repairs of a number of city bridges. Among these are one at Wyoming avenue over Frankford Creek, estimated to cost \$140,000, and one on Twelfth street, under the Connecting Railroad, to cost \$70,000, while repairs to cost about \$65,000 are to be made to the Belmont and Girard avenue bridge, and the Thirtieth and Columbia avenue bridge, to cost \$18,000. Both the latter bridges cross the Pennsylvania Railroad.

The Navy Department will offer for sale on July 22 materials belonging to that Department, at the Indian Head, Md., naval proving ground. There are included among the articles to be sold engines, machine tools, scrap, &c. Schedules containing form of proposals can be obtained from the Inspector of Ordnance, United States Naval Proving Ground, Indian Head, Md.

Preliminary work in connection with the erection and installation of a municipal electric light plant has, it is understood, been authorized by resolution of the Councils of Woodbury, N. J. Details of this work are not yet available.

The property and all the machinery of the late Johnson Railroad Frog & Switch Company, Chester, Pa., was recently sold at a receiver's sale by order of the Delaware County Court. The entire plant and equipment was bought by parties represented by George M. Booth, Chester, Pa., who informs us that while the outcome of the sale is at present rather indefinite, it is quite likely that the plant will again be put in operation.

W. W. Lindsay & Co., engineers, have taken out permits to begin the work of constructing for the city at the filtration plant, Delaware avenue and Pennypack street, a coal elevator and ash bin, for which they recently received the contract. The work will include a steel frame structure, with coal pocket, trestle and steel coal bins.

The Standard Pressed Steel Company, manufacturer of pressed steel shaft hangers, reports business for the season of the year as being good. The foreign demand is increasing rapidly, as is also that from the domestic trade, except in the Southern States. The greater proportion of the orders, however, are made up of those for small lots. Export shipments have been made recently to India, Java, Switzerland, France, and Germany. Several hundred hangers were shipped to Valparaiso, Chile, and a good number to the Philippine Islands.

The Energy Elevator Company continues very busy. The demand for freight and passenger elevators is very good, both from local and out of the city sources. A 5000-lb. capacity electric lift is being installed in an Overbrook garage, while another large electric freight lift is being supplied to a local concern. A hand-power special passenger lift has been ordered by the Pennsylvania Salt Mfg. Company, while numerous orders for carriage and freight lifts have been booked from local customers, as well as from buyers in the South and West. A notable shipment recently was made to Alaska. This was for one of the large capacity hand-power freight elevators.

A Rio Janeiro cablegram, under date of July 10, states that a group of Canadian capitalists, headed by Messrs. Leslie and Jennison, is negotiating for the purchase of all the manganese produced in the State of Minas-Geraes, Brazil.

New England Machinery Market.

WORCESTER, MASS., July 16, 1907.

Confidence in the outlook has become a fixed condition of the machinery trade in New England. No one can be found who disputes the common prophecy of a renewal of the best market conditions in the fall, there being a notable list of converts to this belief. The manufacturers continue to report an increase in inquiries and a greater number of orders for delivery beyond the near future. The dealers have had a very satisfactory week. A number of medium sized lists are out, though nothing of great amount.

Providence, R. I., dealers report an unusual state of business, promising to exceed all previous records. That city and the Attleboros, which are in the same general vicinity, constitute a very important center of jewelry manufacturing, said to be the greatest in the world, and consequently the machinery dealers have a special market of their own in the lighter classes of machinery, such as are used in this branch of manufacturing. The jewelry factories are very busy and are confident that they will see an exceptional autumn. Conditions in Providence are equally good in other branches of manufacture, including machine tools. The great works of the Brown & Sharpe Mfg. Company find no change for the worse in business booked—it is rather on the increase, in fact—and the other machinery people are almost, if not quite, as prosperous. The strike of machinists, which affected a few shops, has not interfered with production to any great extent, and the plants are rapidly getting into their old shape as to working force.

The national banks and trust companies of New England report an increasing demand from manufacturing and mercantile concerns for accommodation in the way of loans, but there is no scarcity of money with which to supply the wants of any business house within the limit of its credit. The banks assert that they have full confidence in business conditions, and that consequently their attitude toward their customers has not changed in the least, no inclination existing to curtail lines of credit. There is no difficulty in securing necessary funds for the extension of plants and to take care of increasing business at any rate with established concerns. New comers in the industrial field may find capital slow to invest, and banks slow to accept their paper, but this is always the case, and, on the whole, new industries are probably better off than they were two or three years ago, both in their relations with investors and with the banks, for the latter are generally glad to encourage new customers up to a certain limit of safety. So altogether New England industries have no ground for complaint, and the same condition is reported by banking men as existing all over the country. Indeed, it is seldom that tightness of the money market, so-called, has a noticeable effect upon the relations of the local banks and their customers among manufacturing and mercantile interests. The only effect upon the business house is the indirect one resulting from interference with the plans of railroads and other great interests in securing funds with which to carry on improvements, which may cause a falling off in demand for products.

The Novelty Engineering Association, 258 Main street, Fitchburg, Mass., is making inquiries with the intention of purchasing a 30-in. drill; a planer 36 x 36 in., with 8 to 12 ft. bed; a milling machine, either No. 1 or 1½; radial drill, either with or without tapping attachment; 24-in. lathe, 12-ft. bed; speed lathe, 12 or 14 in., with 6-ft. bed, and pofer hack saw, 14-in. blade. The company would take second-hand tools, as delivery by September 1 is desired. It manufactures patented novelties, tools and machinery.

E. & T. Fairbanks & Co., St. Johnsbury, Vt., manufacturers of scales, brass valves, power hammers and other standard goods, are to establish a branch plant for the manufacture of their products at Sherbrooke, Canada. A new distinct corporation, controlled by the parent company, will be organized, to be known as the E. & T. Fairbanks & Co., Ltd. Plans are now being made for a substantial brick building of mill construction, thoroughly equipped in the most up to date manner. The main building will probably be more than 250 ft. in length and 50 ft. wide, with one or two ells, and so constructed that as the size of the business increases the building can be extended to meet requirements. The purpose is to manufacture a full line of Fairbanks scales, such as elevator and dump scales for weighing grain and scales to do this work automatically; also very heavily constructed track scales for weighing in carload quantities, platform scales for general use and such other smaller scales as may be required in a rapidly growing country. E. & T. Fairbanks & Co., state that their main purpose in establishing the branch is to be in the Dominion and take part in its development, and to be among the Canadian people to get them acquainted with the high character of the goods manufactured by the company.

Hiram Percy Maxim, whose resignation from the engineering staff of the Electric Vehicle Company, Hartford, Conn., was noted in this column last week, states that he is not yet ready to announce his plans for the establish-

ment of a new automobile manufacturing establishment, excepting that the company will bear his name and another well known in the automobile trade, and that the industry will be located at Hartford. Mr. Maxim states that the enterprise promises to become eventually one of considerable magnitude, and that full details will be given out as soon as the first cars are out. The general plan includes the manufacture of electric automobiles and trucks and gasoline cars.

The Automatic Air Compressor Company, Bridgeport, Conn., is a new corporation organized under Connecticut laws to manufacture an automatic air pump for use in pumping liquors and for other purposes where small power is required. The capital stock is \$30,000. John Rogers is president; E. S. Pease, vice-president; James A. Pease, 1115 Main street, Bridgeport, treasurer, and C. S. Oberbeck, secretary. The company states that it has let a contract for the manufacture of the pump and will put it on the market immediately.

The Stratton Engine Company, formerly the Stratton Rotating Engine Company, Fitchburg, Mass., has reorganized under a Massachusetts charter, with authorized capital stock of \$1,000,000. At a meeting held July 9 R. E. Erdman was elected president; Franklin Stratton, vice-president; S. W. Beers, treasurer and general manager; Thomas Dalton, secretary. The Board of Directors consists of the officers and R. R. Chamberlain, Fitchburg; J. H. Spaulding, Boston, and Franklin L. Sprague, Keene, N. H. The company has a well equipped shop at Fitchburg, and the manufacture of the Stratton rotating engine is about to begin on a commercial scale.

The Universal Machine Screw Company, Hartford, Conn., is bringing out a larger size of its universal multiple spindle screw machine. The new size will have a capacity of 1½ in. diameter.

Many shops and factories of New England will give their employees the customary vacation, ranging from three days to two weeks. The custom has been growing of late years. The time is profitably spent in making necessary repairs and changes, and the workmen are able to do better work afterward, it is believed, because of the rest they have enjoyed. The Brown & Sharpe Mfg. Company, Providence, R. I., has sent out notices that its works will be closed from August 2 to 12, inclusive, during which time the offices will be open as usual and orders will receive the same attention as at other seasons of the year.

The New England Gear Works is a new concern, located at 100 Purchase street, Boston. J. C. Horne is the proprietor, and the product will be a general line of gears and high class jobbing.

The recently organized C. A. Dreisbach Foundry & Machine Company, New Haven, Conn., has completed the equipment of its new foundry and will begin this week to manufacture gray iron castings up to 5 tons weight and to do a general pattern making business. The new foundry building is 48 x 81 ft., and in addition there is a building in which are located the pattern shop and offices. C. A. Dreisbach is the president; Frederick Chatfield, vice-president, and Noble P. Bishop, secretary and treasurer.

The J. W. Lathrop Company, Inc., Mystic, Conn., manufacturer of gasoline engines, is to erect a new shop building, 50 x 150 ft., three stories and basement, near the site of the wooden building which it now occupies. Later the old shop will probably be torn down. The growth of the business has been steady, and the company is now manufacturing about 1200 engines a year.

The Hartford Electric Light Company, Hartford, Conn., has been given permission to increase its authorized capital stock from \$3,000,000 to \$5,000,000. The outstanding capital is \$2,100,000, so that the recent action means nothing in the way of immediate increase of stock issued. The company has awarded to the Westinghouse, Church, Kerr Company the contract for two 2500 hp. Hornsby boilers, and for an addition to its plant at Dutch Point, but no other improvements are contemplated for the near future.

The Milliken Receivership.—On the application of the receivers of Milliken Brothers, Incorporated, Judge Holt of the United States District Court made an order at New York, July 13, authorizing the receivers to continue the business for a period of three and a half months, with leave to apply for a further continuance. The order authorized the receivers to pay on August 1 the \$90,000 interest due on the company's \$3,000,000 of 6 per cent. bonds. The receivers in their report emphasize the necessity of keeping up the interest payments in order to prevent foreclosure and thereby preserve the large equity in the property. The report says that the operating expenses of the plant on Staten Island have been cut in two, and that other economies have been enforced. It is stated that all new fabricating work offered that can be undertaken with a profit is being accepted.

Cincinnati Industrial Notes.

CINCINNATI, OHIO, July 16, 1907.

Edward E. Klein, until recently in charge of one of the steel mills at Ashland, Ky., has arrived here, and will assume charge of the plant of the Andrews Rolling Mill & Steel Company, at Newport, Ky. The new plant will soon be ready for business.

Several weeks since it was announced in these columns that the Steel Foundry Company had been thrown into voluntary bankruptcy by the united action of its stockholders. This action was the result of labor troubles that had for some time been a serious drawback to the output of the plant, which was one of the best constructed foundries in the country, and which possessed exceptional facilities for handling freight both in and out. The inventory shows the following assets: Building, \$46,191.17; power equipment, \$21,636.13; machinery equipment, \$84,965.32; office furniture, \$675.50; tools and foundry supplies, \$3392; material, patterns, flasks, &c., \$38,112.50; cash, \$147.90; accounts receivable, \$30,569.93; castings on hand, \$11,000; total assets, \$236,689.95, with liabilities not exceeding \$75,000.

The Vulcan Foundry Company, located at 3300 Western avenue, this city, has changed hands, and it is the intention to spend considerable money in enlarging the plant. L. C. Twachtman, who until recently has been connected with the Fostick Machine Tool Company, is said to have acquired a controlling interest in the stock, and will direct the affairs of the reorganized company.

New Publications.

The United States Steel Corporation. By Abraham Berglund, Ph.D. Publisher, Columbia University Press; the Macmillan Company, New York, agent. Pages, 178. Price, \$1.50.

This work is No. 2 of Volume XXVII of "Studies in History, Economics and Public Law," edited by the Faculty of Political Science of Columbia University, and discusses the rise, character and influence of the great corporation named. It is probably the first attempt to collect the facts relating to the organization, scope and position in the trade of the United States Steel Corporation. The author has been commendably painstaking in his search for data and has drawn liberally from the columns of *The Iron Age*. He presents the facts without bias or distortion.

Moody's Manual of Railroads and Corporation Securities for the Year 1907. Published by the Moody Corporation, New York. Pages, 2550, in addition to lists of banks and trust companies which are unpagged. Price in cloth, \$10.

With the present issue, Moody's Manual, easily recognizable by its bulk and red binding, enters upon its eighth year. It has become standard as an investment reference publication and the new volume appears to be more complete than any of its predecessors. Counting the reports of 13,500 banks and financial institutions, the manual reports the facts on over 20,000 corporations, including 1512 railroad companies, 1129 electric traction companies, 1158 gas, electric light and electric power companies, 267 water supply companies, 259 telephone, telegraph and cable companies, 1510 active, operating and producing, industrial and miscellaneous corporations and 880 active or operating mining companies. In the department of railroad statistics the present manual furnishes data on 256,301 miles of steam railroad, all on the American continent. The mileage in the United States reported on is 222,013, or about 2000 miles more than was reported by the Interstate Commerce Commission for the year ending June 30, 1906. The full capitalization represented in the book, excluding the capital of bank and trust companies, is \$36,248,668,000. This is the capitalization of about 6700 different companies. The proportion within the United States is more than \$33,600,000,000, or over 93 per cent. The contents of the manual are classified as follows: 1, Stock Exchanges; 2, Government Securities; 3, Steam Railroads; 4, Traction; 5, Gas and Electric Light; 6, Water Supply Companies; 7, Telephone, Telegraph and Cable; 8, Industrials; 9, Mines; 10, Banks, Trust Companies, &c.

HARDWARE

A PRACTICAL question of not a little difficulty comes up to jobbing houses in connection with the general use of automobiles and the resulting demand for equipment and supplies in large variety. As a consequence Hardware merchants in many places are carrying in stock some of the articles most called for, sometimes in competition with regular automobile houses, but more frequently in towns where such houses are not found. Jobbers who naturally desire to be in a position to execute the orders of their customers for practically all the goods they handle find that calls are often made upon them for articles in this line. This is a potent reason for adding them to their own stock and making the sale of these goods a regular part of their business. There are obvious arguments both for and against the handling of this line at wholesale or at retail, and the determining of the question, in view of the special circumstances in each case, calls for judgment on the part of the merchant.

There is a good deal of diversity in the way in which this matter is regarded by the wholesale houses, with whom the adding of an important and complicated line is always a somewhat serious matter. A few jobbing houses are taking hold of this branch of business with a good deal of energy, adding what may be termed a department for the sale of this class of goods. Others without going into the trade so formally are gradually increasing their assortment of goods which belong in this general category, limiting their attention usually to the articles most in demand. Some leading houses are considering the matter seriously, with the prospect that within a short time they will catalogue and carry in stock a general line of these articles. Some, however, consider the matter as outside the Hardware field and are content to leave the automobile houses to supply the demand.

The fact that the trade is taking hold of this branch of business and bringing within the Hardware field articles which heretofore have been sold under other auspices, will perhaps serve as another illustration of the tendency in the trade concerning which our outspoken correspondent, Ed. Ford, writes so forcibly in another column. A good many articles that come under the general designation of automobile supplies have long been sold by Hardware merchants, and the number and variety of such goods is constantly increasing. Any Hardware merchants who are so situated that they can carry on a profitable business in this line are certainly justified in handling it, and will serve the public better by doing so in as efficient a manner as possible.

With the broadening of the Hardware field there should be a broadening also of the views of the trade, and little disposition to find fault with merchants in other lines who may see fit to add to their stock goods which are usually found in Hardware stores.

Condition of Trade.

The somewhat gloomy predictions which were freely made a few weeks ago in regard to a probable shortage in the crops serves as an admirable background for the more cheerful views which are now prevalent. A feeling is thus induced that even if in some sections there is to be a failure of crop compared with the record yields of recent years, it will not be so serious a matter, as the harvest will probably be not much below the average, while the farmers are in a splendid financial condition and will probably get full prices for their products. Whatever there may be in the way of a slackening of the pace in commercial and industrial matters, it does not seem that crop failure is to be one of the factors with which the country must contend. A fair yield in the great staples and excellent conditions in many of the minor, but really important, products promises to give the agricultural classes no reason for complaint, while the country at large will find in these commodities this year, as in other years, a substantial contribution to the national wealth and a basis for continued business activity. The vacation season thus has a cheerful atmosphere and the principals and their assistants in manufacturing and distributing establishments may enjoy a well earned respite from the exactions of the year's trade. The course of business meanwhile continues without material interruption, except as the summer season, with its heat and cessation of especially aggressive work, diminishes not a little the volume of current transactions. Those who are called upon to watch the markets and determine the policy of their house in regard to placing orders for future requirements are generally showing some conservatism and not anticipating their wants too far ahead. As a rule they find the market steady, but not advancing, with here and there indications of less pressure on the factories and of slight concessions in price. The decline in Copper directly affects many products in this line and will come as a welcome relief to manufacturers who use this metal as one of the materials entering into their products. Merchants generally seem to be in excellent financial condition, and there is little complaint in regard to collections. Export business, though not receiving the attention it should from many manufacturers, who find their capacity fully occupied in supplying the domestic demand, continues to increase, and a growing volume of goods, notwithstanding the current high prices and necessarily high cost of manufacture, are finding sale abroad.

Chicago.

The news of estimated crop shortage contained in the recently issued Government report was received by industrial trade interests with no manifestations of surprise or uneasiness. Though it represented a greater decrease in the yield than was generally anticipated, the effects of these conditions have already been liberally discounted by buyers and sellers of merchandise. While in Hardware lines trade is distinctly quieter, so far as new business is concerned, the falling off is in no quarter attributed to lack of confidence in existing conditions. Through the West and gradually extending northward harvesting operations are engaging the attention of the farmers, and it is but natural that retail stocks are moving more slowly. The insistent demand for prompt execution and shipment of back orders continues, which in itself is a good sign, indicating as it does that in spite of the heavy purchases heretofore made they are

not under present circumstances deemed to be in excess of needs. Seasonable goods, though in some cases slow in starting, are now moving in a satisfactory manner. In Heavy Hardware stocks it is still difficult to maintain assortments of Sheets and Bars. Trade in the latter has been unusually heavy from all sources, and still continues in good volume. It is now possible to get somewhat prompter shipment of Galvanized Sheets, especially from the independent mills, but at that there is still room for the exercise of patience. The demand for wood stock from Wagon and Implement makers is not less urgent than for Iron goods; this refers particularly to the shipment of specifications on contract, which have been delayed. Builders' Hardware is in fair demand. Locally there are some large buildings being planned, the construction of which, it is expected, will be begun before the close of the year. These, when they come, will furnish an amount of business that will compare favorably with extensive work that last year helped to swell the totals of Builders' Hardware sales.

Cleveland.

THE W. BINGHAM COMPANY.—Trade in the Hardware line at the beginning of the last half of the year starts out with a good swing. The late but fine summer weather that we are enjoying now is bringing all crops forward in good shape. The hay crop throughout this section will probably be the largest in many years; corn is doing well; wheat is better than anticipated; oats are poor and the crop will be light.

At this time of the year many merchants take their inventory, and as they all have enjoyed a good, steady trade during the last six months they will find their stocks in many places depleted, and will want to sort up. This is the time of the year also when many salesmen desire to take their vacations; some go fishing, others go hunting, and still others stay at home and get acquainted with their families, all of which is very pleasant. This certainly is a season we all look forward to with great pleasure, for it is a true saying, "All work and no play makes Jack a dull boy."

Prices for the most part are steady and firm. The demand for the general line of Hardware is very good, and as we come into the fall season we anticipate an even and steady trade. Fall goods that were sold early are beginning to go forward to the trade, and orders will soon be entered for spring goods to be shipped later on.

Never in the history of our country was the wage earner so prosperous as at the present time. All seem to be well employed and receiving good wages, and reports given out by the savings institutions throughout the land, since the close of business July 1, indicate that our people are laying by their savings for a "rainy day." The Bowery Savings Bank of New York City at the close of business July 1 had \$100,000,000 on deposit. Society for Savings of Cleveland had \$51,000,000 on deposit, and in other cities like reports are current. It is said at least one-half of the depositors are women, indicating that the wage earner takes his money home at the end of the week, pays his current bills and the balance he puts in the bank himself or sends his wife to do so.

Truly we are marvelously blessed. Happy should we all be that we live in such a great and glorious country that gives us such prosperity.

New Orleans.

WOODWARD, WIGHT & Co.—The prospects for the sugar, cotton and rice crops seem much better now than they were two weeks ago. There is no let up from the rush business that everybody was doing in June. The agricultural outlook is so much better with us than it was three or four months ago that nobody is bothering particularly about the chance of a slight relaxation.

Collections are rather slow, and there is beginning to be a renewed complaint of car shortage among the lumber mills and among the Hardware trade that sells to them. Heavy Hardware, while not as hard to get as in the early part of the year, is still slow in being shipped by the mills. Sales of this class of goods, however, are particularly good now. Light Hardware is moving fairly

freely, but not quite as good as the heavy stuff. Builders' Hardware and Builders' Material are in good demand.

Money is still easy to get, but at a high rate for regular established businesses, but hard to get for any new enterprise. There is, however, a cheerful tone to all business down here now, and while the election a year from now is causing a certain amount of caution, there is no lack of confidence in the continuation of the general prosperity of our section.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—We believe that the Southern Hardware jobbers are enjoying a fairly good volume of business for this season of the year. We think possibly the sales are running slightly behind last July, which is caused by the fact that the season is fully four to six weeks late, and our July business is more like June business, which is always a light month.

The reports that we get from all over the country in reference to crop prospects are very encouraging. The wheat crop is being harvested and is showing a much better yield than was anticipated. The corn crop is looking fine in all sections of the South. The oat crop was one of the best that the Southern farmers have ever had. The cotton crop has improved wonderfully, and, while it is quite backward, it is looking well, and getting better every day. We are having just exactly the right kind of weather for the young cotton, hot days with warm nights and seasonable rains every few weeks.

Building and construction work continues at a great rate. Building permits in the city of Nashville show a large increase over corresponding period for last year. Market conditions on Steel, Iron and Hardware commodities are strong, prices are all being well maintained, and factories are busy. Manufacturers in some lines are catching up a little with their orders, and jobbers are getting much better deliveries than they have had for a long while. Collections are about normal for this season of the year.

Portland, Oregon.

FAILING, HAINES & McCALMAN.—The previously chronicled prosperity of this section continues. Portland continues to be the greatest lumber, wheat and flour exporting port on the Pacific Coast, and one of the greatest in the country. In May, Portland ranked second to Philadelphia in flour exporting, being only 11,000 barrels behind Philadelphia and about 6000 barrels ahead of New York. Portland also continues to lead the United States for cities of its size or larger in the percentage of increase of bank clearances over last year. This is the more extraordinary, as a very large proportion of the banks of this city do not clear through the clearing house and many of the largest pay rolls are paid in cash. Immigration continues to flow into this territory in an unexampled manner. Probably more settlers have come into Oregon and Washington within the last six months than ever before in a like period of time. As we have several times stated, the immigration we are getting out here is of the better type—people that have been successful in their old homes and are moving out West with the determination to be more successful in their new ones. We are continually receiving inquiries for business openings from people of moderate capital, but everybody in our line who has a good business is making too much money to want to sell.

As yet the usual summer depression has not made itself felt to any appreciable extent and all jobbers are as active as they were in the busiest months of the year. Not only have we not felt the summer lull, but it is the confident belief of all dealers in our line that it will not make itself felt to any great extent and that this year will be like the last, when some of our heaviest months were those usually found dull. In a word, this territory was never more prosperous than it is to-day. Money is plentiful, and can be obtained at low rates of interest. Collections are good, a very large proportion of bills being discounted. Everything looks bright for the latter half of the year.

Boston.

BIGELOW & DOWSE COMPANY.—Usually in midsummer we look for a marked reduction in sales, but this year there is no apparent let up in the demands for Hardware. The retailers are having a good trade and the jobbers are all unusually busy. Stocks are fairly well assorted, except they are running low on many seasonable goods, on which the sales have been abnormally large.

The crops are growing rapidly and notwithstanding the cold and disagreeable spring and the late planting, everything promises well for the farmers, who are sure to reap an abundant harvest. The mills are running on full time and labor is fully employed. Indeed, there is a scarcity of farm laborers, notwithstanding the high wage they demand. The farmers distant from large cities find it very difficult to secure laborers at any price. The season is favorable for the largest hay crop secured in many years.

There is a large amount of building that will call for lots of Hardware. The delay in getting Nails from the mills makes a large demand on the jobbers' stocks. In times like these the trade appreciate the advantage of having large stocks in store to supply their pressing demands.

Prices are firm and there is but slight improvement in factory deliveries. While it seems no time to speculate on future advances, one is perfectly safe in buying freely for his immediate wants. A well assorted stock is the best advertisement to secure trade, either for the retail or the wholesale dealer. If you have the goods you can make the sale against the dealer who informs his customer that he is "out to-day," but will order if he will wait. Collections are good.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Thus far through the month of July trade has continued in a fairly high line of activity, and equal to the same time in July, 1906. This midsummer month is usually the one for the greater number of salesmen and store force to take their vacations. Some of the latter may be called home, however, owing to the large number of visitors here. The citizens of Philadelphia are this entire week devoting themselves to the entertainment of the members of the B. P. O. Elks, who are holding their annual convention here. It would be impossible to estimate the number of members of this organization who will be present, extending into very many thousands and covering practically every State and the various cities and towns—the Pacific Coast, as far off as Honolulu, South to New Orleans, all through New England, and all through the Northern borders of our country. The members of this organization, including the women who accompany them and the visitors from various sections of the country, it is estimated, will form a body reaching 500,000 persons.

The decorations of the city in honor of this honorable body, including especially what is called the Court of Honor, are something grand, and the decorations of the various large department stores quite surpass anything ever before seen. These decorations on Broad, Market and other streets were completed by Saturday last, and it is estimated brought out anywhere from 300,000 to 400,000 persons Saturday evening to enjoy seeing them. The crowds entered the city on Monday of this week, when the meeting began. Various places surrounding the city were visited the first and second days, and the grand parade is to take place on Thursday of this week, on which particular day, it is expected, that all places of business will be closed. The convention continues during the entire week. We all hope for fair and pleasant weather for steamboat excursions, automobile riding, carriage driving and visiting the various places of interest in our city, which will naturally be indulged in by those who have given their presence here.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—The hot, "growing" weather the past few weeks has materially improved the outlook for crops in this section. We sent our salesmen carefully prepared forms upon which to report on crop conditions. These reports have been re-

ceived and tabulated according to the States and Territories where these salesmen travel. These reports show a peculiar, "spotted" condition. Probably the reports are, in some measure, influenced by the salesman's own temperament, but taking them upon the average we believe they give a fairly accurate idea of the present crop conditions. From these reports we are led to believe conditions are very much improved. We think the recent Government reports are somewhat too pessimistic. We are backed up in this opinion by the fact that business continues unusually good for the month of July. Notwithstanding a number of our salesmen are away on vacations—more than at this time last year—our sales are showing a considerable increase. Another factor indicating a strong demand for goods in this territory is the number and size of mail orders being received direct from the trade. We expected a dull July, and we must admit so far we have been pleasantly disappointed.

We have been advised of an advance on certain Revolvers. Also of an advance in the price of Steel Goods ranging from 7½ to 10 per cent. So far we have not heard of a decline or weakness in any line. It seems none of our Hardware "octopuses" are afraid the President will start an investigation.

It does seem a little strange while so many industries are being "touched up" by the Government, the Hardware business so far has escaped. I guess, however, I won't say anything more on this subject, as some of our manufacturing friends may drop us a line with the suggestion that we lie low while the other fellow is being spanked.

We have read with some amusement the criticisms in the trade press of the advertising discussion that "popped" into the retail Hardware Dealers' convention at Boston. Our editorial friends in the trade journals put their views in a way that reminds us of when we traveled in Utah and the Mormon leaders thundered forth, "Thus sayeth the Lord." The writer modestly dares to say he thinks the retail Hardware dealers are just as well posted on this subject as the trade journal. Here is the situation:

Manufacturers and jobbers advertise to the consumer for the benefit of the retail dealer. They say, "We advertise to help you sell these goods." Then the retail dealers in convention, 95 out of 100, say, "We do not see where we are helped. We believe the money is wasted." Five out of the 100 say, "We know of two or three instances where the advertising has made sales for us." If nothing else, it is the opinion of 100 good dealers from different parts of the United States. This expression is surely worth something. It is at least the opinion of 100 dealers—95 against and five in favor of the advertising-to-the-consumer proposition. Now for a trade paper to come out and practically tell these dealers they do not know what they are talking about is just a little bit funny.

For three years past the writer has asked this question about advertising to the consumer of almost every Hardware dealer who has visited his office, and the proportion of answers has been just the same as in that convention—about 5 per cent. believe the money is well spent, while the great majority state in their opinion the campaign of advertising to the consumer is a tremendous waste when looked at from the viewpoint of actual sales made. The question every retail Hardware dealer in the country should ask himself is, "How many actual sales have I made over the counter as a result of this direct-to-the-consumer advertising?"

We suggest *The Iron Age* start a discussion of this subject. Don't wait for voluntary letters, but write 50 letters, for instance, to 50 retail Hardware dealers rated at \$10,000 in 20 different States. Ask them the direct question—"How many sales have you made on account of manufacturers and jobbers advertising direct to consumers?" For various reasons if the trade journal should ask for voluntary letters they might not get altogether reliable replies.

We are willing to go on record, from our own observation, that the expression of the retail Hardware dealers in that convention on this subject was correct, and that

a thorough vote of the retail Hardware trade of the country would prove this to be a fact.

Baltimore.

CARLIN & FULTON.—Trade continues quite active in seasonable goods, such as Window Screens and Doors, Wire Cloth, Lawn Mowers, Freezers and Refrigerators. The farming community is busy with the wheat harvest, which in ordinary seasons would have been gathered before this, and is probably two weeks late. The backwardness of the spring has delayed the shipment of vegetables and fruit, and consequently the retail trade has felt the scarcity of money generally realized from that class of business, but now that we have had some very hot weather the country is feeling the good effects, and the prospects for all crops are greatly improved.

Building operations are quite active, in spite of the high prices for material and labor, but possibly not as great as they would be were the costs somewhat less.

This is generally the dulllest month of the year, and the strength of prices tested perhaps more than at any other time. The market, however, seems strong, and as in a few weeks the fall season begins we look for no reductions of any importance; in fact, as manufacturers are now working on high priced raw material advances are more to be expected than declines.

NOTES ON PRICES

Wire Nails.—Some mills that have been closed for repairs are again in operation, and others will follow along the same lines. Demand continues good, while the mills are producing all they can under these conditions. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$2.00
Carload lots, to retail merchants.....	2.05

New York.—Business in the local market keeps up beyond jobbers' anticipations, considering the lateness of the season. Carloads of Nails are being received in about two weeks after placing orders, which is an improvement on previous conditions. The local market is fairly well maintained, except that sometimes Hardware jobbers sell Nails at less than regular quotations to influence the sale of other goods. New York jobbers' quotations are: To retailers, carloads, on dock, \$2.19; less than carloads, on dock, \$2.33; small lots at store, \$2.30.

Chicago.—There seems now no reason to expect any marked decrease in demand throughout the remainder of the season. From the urgency of dealers' demand for delivery of goods ordered it is assumed that consumers' requirements are equal to stock supplies. Prices are generally firmly held. Quotations are as follows: \$2.18 in car lots to jobbers and \$2.23 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—The Pittsburgh Steel Company resumed operations at its plant this week, after a fortnight for repairs. The Wire mills of the leading interests are closing in rotation for their repairs. Production is maintained at as high a point as possible, demand continuing good. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$2.00
Carload lots, to retail merchants.....	2.05

Cut Nails.—While mills have been closed for inventory and repairs shipments have been somewhat delayed. It is expected that normal production will soon be the rule, as mills are again resuming operations. Occasional concessions are made from regular quotations. Quotations are as follows, f.o.b. Pittsburgh: Carload lots, to jobbers, \$2.05; less than carloads, to jobbers, \$2.10; less than carloads, to retailers, \$2.20. Iron Cut Nails at points west of and including Buffalo and Pittsburgh are held at 10 cents advance on Steel Cut Nails.

New York.—Demand continues good, covering a general range of sizes, some of which are reported as being scarce this week. Mills appear to be somewhat slow in shipping just at present. The market is generally main-

tained, but jobbers of Hardware sometimes sell small lots of Nails at less than jobbers' regular quotations to secure business in other lines. New York jobbers' quotations are on the basis of \$2.30 for small lots at store.

Chicago.—The demand is by no means crowding, but is on the whole steady, and for the dull season considered satisfactory. No complaint is heard among the jobbers of serious price shading in quotations. Quotations are as follows: Iron Cut Nails, car lots, to jobbers, \$2.33; to retailers, \$2.38; Steel, to jobbers, in car lots, \$2.33; to retailers, \$2.28.

Pittsburgh.—Most of the iron mills are resuming this week after their repairs, and production is getting back to the normal. Demand is fairly good, while concessions are made occasionally. Regular quotations are as follows, f.o.b. Pittsburgh: Carload lots, to jobbers, \$2.05; less than carloads, to jobbers, \$2.10; less than carloads, to retailers, \$2.20. Iron Cut Nails at points west of and including Buffalo and Pittsburgh are held at 10 cents advance on Steel Cut Nails.

Barb Wire.—Mills have not fully caught up on contract orders, and shipments are still delayed to some extent. New business is light. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots.....	Painted.	Gal.
Retailers, carload lots.....	\$2.15	\$2.45
Retailers, less than carload lots.....	2.20	2.50
	2.30	2.60

Chicago.—New business is light, but in spite of the heavy shipments coming forward on contracts deliveries are still considerably delayed. We quote as follows: Jobbers, Chicago, car lots, Painted, \$2.33; Galvanized, \$2.63; to retailers, car lots, Painted, \$2.38; Galvanized, \$2.68; retailers, less than car lots, Painted, \$2.50; Galvanized, \$2.80; Staples, Bright, in car lots, \$2.30; Galvanized, \$2.60; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Mills are still somewhat behind on shipments, but there is not a great deal of new business, and the mills are catching up. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots.....	Painted.	Gal.
Retailers, carload lots.....	\$2.15	\$2.45
Retailers, less than carload lots.....	2.20	2.50
	2.30	2.60

Smooth Fence Wire.—Specifications are being received by mills on contract orders, and placing of new orders for future delivery has commenced. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.85
Retailers, carloads.....	1.90

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base.	\$0.05	.10	.15	.25	.35	.45	.55	1.05	1.15
Galvanized....	\$0.30	.35	.40	.45	.55	.65	1.05	1.15	

Chicago.—The placing of contracts for forward delivery has begun, and indications point to a large business for fall delivery. Good progress in shipment of back orders is reported. Quotations are as follows: In car lots, to jobbers, \$2.03, f.o.b. Chicago, and to retailers, \$2.10.

Pittsburgh.—The situation is unchanged, specifications being good, while new business is not very heavy. We quote, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.85
Retailers, carloads.....	1.90

Lamp Wicks.—The manufacturers of Cotton Lamp Wicks have recently advanced the price and restricted the freight allowance, making the discount 60 and 20 per cent. from list, a former price having been discount 70 and 10 and 10 and 5 per cent. Where formerly the goods were delivered all over the United States, practically, actual freight is now allowed up to 50 cents per 100 lb., or the equivalent of ½ cent a pound.

Revolvers.—The several makers of Double Action

Revolvers have just advanced the base price on these goods from \$1.80 to \$2 each.

Sash Cord.—There is as yet no change in the price of Cotton Braided Sash Cord. For nearly two months there has been an effort, on at least three occasions, to increase the cost to the trade, each attempt showing more progress in the way of winning over reluctant producers to the proposition. It is said that at the last meeting of manufacturers nearly all were in favor of it and by some in the trade it is believed an advance will be decided on at the next meeting, in the near future.

Uwanta Wrench Company.—The Uwanta Wrench Company, Meadville, Pa., is manufacturing a line of Screw Wrenches, embodying special features, for the use of mechanics, pipe fitters and railroads. The various styles are indicated below, being subject to the following discounts:

Mechanics' Favorite.....	50 %
Railroad Special.....	50 %
Railroad Special, iron handle.....	40 and 10 and 5 %
Combination Short Nut.....	50 %
Combination Long Nut.....	50 %

Copper Products.—The market for Copper and Brass materials continues listless, with little movement so far as new orders are concerned, there being much conservatism, influenced doubtless by the several reductions already made, and uncertainty as to the course of the market for this metal. Sheet Copper is now 28 cents per lb., base, having declined from 32 cents, the former nominal price; Soldering Coppers, 27 cents per pound on 300 lb. and over; Copper Rivets and Burrs, discount, 35 and 2½ per cent., although some sales, it is said, have been made at discount of 40 per cent. in quantities; Yellow Metal, 29 cents per pound, formerly 22 cents; Copper Wire, 24¼ cents per pound, at mill; Tobin Bronze Rods, 23 cents, base, reduced from 25 cents per pound, and Copper Seamless Tubes, 30 cents, base, a reduction of 3 cents, determined on to-day. Brass Sheets, Brass Wire and Brass Rods have each declined 1¾ cents per pound to consumers, the bases now being, respectively, 22, 22¼ and 22¼ cents per pound. Seamless Brass Tubes have declined 2 cents, making price 25 cents per pound, and Brazed Brass Tubes 1¾ cents, making price 29 cents per pound.

Rope.—Manufacturers find business somewhat quiet, but this is not entirely unlooked for, as July and August are not expected to be heavy months in the Cordage trade. Under these conditions card prices, represented by the following quotations, are not adhered to in all instances, with the exceptions of Bolt and high grades of Manila Rope, which are maintained. Quotations are as follows: Pure Manila, 13 to 13½ cents; B quality, 12 to 12½ cents. Pure Sisal, 9¼ cents; No. 2 quality, 7¾ to 8 cents; No. 1 Jute, ¼ in. and up, 9 cents; No. 2 Jute, 8½ cents.

Binder Twine.—Winter wheat harvest is now well under way, but from 10 days to two weeks late. The prophecy that considerably less Twine would be required than usual does not seem to have been much exaggerated. In some localities there is quite a demand for small lots of Twine, but short and thin straw, abandoned acreage and other causes are showing themselves in reduced consumption of Twine. Oat harvest is also reported late, and while in some sections the growth of straw is said to be heavy, in others a thin growth is reported. No change in prices is noted. Sisal and Standard Twine ranging from 9 to 9½ cents per pound, central delivery.

Window Glass.—The Eastern Window Glass Jobbers' Association, at their meeting held last week, reaffirmed prices, as a majority of the members were not in favor of making any advance owing to the limited demand. The Central Window Glass Jobbers' Association also reaffirmed prices at a recent meeting. Manufacturers report an increase in inquiries, but jobbers are not anticipating much of a revival in business before the middle of September. Some time since manufacturers who are affiliated with the National Brokerage Company, and representing about 2000-pot capacity, signified their willingness not to put their factories in operation in the fall

until they could be assured of fair treatment by the Glass Workers' Union. It is now reported that on a final showdown, manufacturers representing only about 800 pots were favorable to this plan. The majority of the manufacturers appear to be afraid that if they antagonize the workmen by keeping factories closed, idle factories will be hired by workmen who will run them on the co-operative plan, and demoralize the market by selling Glass at lower prices than factories paying union wages can afford to do. From the present outlook an early start and an open market appears possible. In Greater New York jobbers' quotations from jobbers' list, October 1, 1903, which, it will be remembered, is about 20 per cent. higher than the manufacturers' list, January 1, 1901, are 90 and 15 per cent. discount on all sizes, single and double strength. Outside Greater New York no quotations that would represent the market fairly are available.

Linseed Oil.—Demand, both on contracts and local business, has been quiet during the week. Demand for Seed for export has fallen off somewhat, and to this extent the Oil market has shown some weakness. Large buyers are still waiting to see the future trend of the market before placing contract orders. The firm position of Seed has kept the Oil market strong, in absence of demand. If this prop is weakened, crushers, who are heavily loaded with Oil, may find it to their advantage to dispose of some of their holdings. Heavy buying would probably strengthen the Oil market again. New York quotations are as follows, according to quantity: City Raw, 45 to 46 cents per gallon; Out of Town Raw, 44 to 45 cents per gallon. Boiled Oil is 1 cent a gallon over Raw.

Spirits Turpentine.—Local business has been light, demand having been confined almost entirely to jobbing lots. The market is ½ cent per gallon lower than it was last week. New York quotations are as follows, according to quantity: Oil Barrels, 59½ to 60 cents; Machine Made Barrels, 60 to 60½ cents per gallon.

THE KREIN MFG. COMPANY.

THE KREIN MFG. COMPANY, Wapakoneta, Ohio, after months of preparation, is now engaged in the active production of Chains. The plant consists of three separate brick structures, the first of which is two stories in height, 40 x 160 ft., the ground floor being used for winding and link cutting machinery, also machine shop, and the entire second floor devoted to the welding of the lighter weights of Chain. Of the second building, the first floor is devoted to warehouse purposes and the storage of raw material, consisting of Norway and domestic rods. The third building, a one-story structure, has been specially fitted up as a welding department exclusively, containing at present 25 sets of double forges for standard size Chain, in addition to several larger forges for extra heavy Chain. This building is 48 x 108 and is equipped with the most modern appliances. A wing 25 x 25 ft. adjoining is used for a die shop. Two gas engines supply the motive power, one 40-hp. and the other 60 hp. The shipping and receiving facilities are admirable, the space between each building being sufficient to accommodate a standard gauge track upon which freight cars are switched, enabling the delivery of goods directly from shop or warehouse into cars for shipment, and likewise for the receipt of raw materials. In addition to this, small tramways with turntables have been placed in the center of each building to facilitate the handling of material and finished product. The company is now in position to employ a full complement of hands, and to manufacture and deliver all sizes of Chain promptly. The officers of the concern are as follows: Franz Krein, who is known as a pioneer in the Chain making industry, is president, Robert C. Krein, vice-president, and John H. Goeke, secretary.

Faut & Huffaker, are successors to Faut & Davis in the retail Hardware, Stove, Paint and Sporting Goods business at Brookfield, Mo.

Oklahoma Retail Hardware and Implement Dealers' Association.

THE fourth annual convention of the Oklahoma Retail Hardware and Implement Dealers' Association was held in Oklahoma City on the 9th, 10th and 11th inst. The meeting was called to order on Tuesday by the president, O. A. Smith, Watonga. The president introduced Mr. Heyman, representing the local retail Hardware association, who, in the absence of the Mayor on account of illness, welcomed the visitors to the city. The response on behalf of the association to Mr. Heyman's welcoming address was made by William Murdock of Ralston.

President's Annual Address.

The annual presidential address of Mr. Smith was in part as follows:

There was a time in the history of our country when things were not done on so large a scale; when the farmer was content to till but a few acres, the cross roads merchant did the mercantile business, the local foundry made the Farm Implements for each locality; but to-day there is a centralization of interests; large mercantile businesses are established, as well as extensive factories for the manufacturing of all classes of goods. The retail merchant's business as a distributing agent of the manufacturer is a very extensive as well as a very perplexing business. He becomes the debtor of the manufacturer and the creditor of the consumer, and in the close competition for business there are many perplexing circumstances arising which make the business disagreeable, unprofitable and oftentimes a failure.

To Right Some of the Wrongs,

become better acquainted with each other, to make life more pleasant and business more profitable, is the object of our association.

Since the manufacturer and the jobber, as well as the transportation lines, are closely organized for the protection and advancement of their business, so it becomes us as business men, representing large business interests, to see to it that our general interests are protected in such a way that our businesses may be made pleasant and profitable, and I believe it expedient at this time to call your attention to the following recommendations. Believing in unity and concerted action the greatest good can be attained, for if we would do effective work we must be united, I would recommend we use our best efforts to interest all dealers who are not members to become members of our association.

Interests Mutual, but Many Differences Notwithstanding.

The manufacturer's, jobber's and dealer's interests are in a measure mutual, but at the same time there are many differences arising. They, through close, systematic organization, have protected their interests so well that in many cases the dealers' interests have to suffer through the fault of the manufacturers. I might mention the furnishing of defective parts, wherein the dealer is obliged to pay freight or express from the factory, which is often far east. When we sell a customer a Wagon and guarantee it free from defects in material or workmanship, we don't say to him that if the wheel proves to be defective the Wagon will cost him from \$1.50 to \$2 more; if we did, it would spoil the sale. But it means the same, or it means that much less profit to the dealer. While I am aware the manufacturer is sometimes imposed upon, it should be the duty of our association, through a proper committee, to adjust these matters in a way that will be equitable to both manufacturer and dealer. The repeal of the warranty on Buggies, which is now being so warmly contested, should be thoroughly considered by our members, and resolutions passed fully covering our position on this subject.

Transportation Grievances.

Civilization owes much to the great transportation lines of our country. Without them much of our beautiful agricultural land would be to-day as nature formed it. Without them man could not successfully develop this Western country and build for himself a beautiful home and successful business, which adds so much to our national wealth and prosperity; but like all great enterprises where capital is centralized there is a tendency toward large profits and the people's interests are lost sight of. Such is the condition in Oklahoma to-day. Railroad service is very poor; freight is allowed to congest at transfer points and is often held until the season has passed, and excessive rates are charged. Much discrimination is evident and many legitimate claims are pigeon-

holed in an office desk never to be resurrected again, or if at all, after much delay. I would, therefore, recommend that a committee, by the authority of this association, take steps to assist our members in righting their grievances and securing just claims against transportation lines.

Other Abuses.

Trade abuses, such as catalogue houses, buggy trailing, or the shipment of any line of goods into a town and peddling it over the country, as well as the curbstone implement dealer, who carries no stock but is always offering his goods to the consumer, is demoralizing to the retail merchant's business. The individuals who follow such business pay little or no taxes for the support of the local government and usually sell their goods at as high or higher prices than they can be had from the local dealer. These questions have often been discussed by bodies of this kind, but are still open for a solution, and should be carefully considered by this convention.

President Smith paid a tribute to the traveling men and urged dealers to give them consideration, as they were the dealer's best friends, and were entitled to every courtesy the dealer could extend. He also recommended a careful reading of the trade papers, and urged the dealers to support them. He paid a splendid tribute to Secretary Patterson, and recommended that he be retained as the permanent secretary of the association.

Secretary's Report.

D. C. Patterson, secretary of the association, in his annual report called attention to a number of things which had been accomplished during the year on behalf of the retail merchants. He urged that the constitution and by-laws be revised in order to make them conform to the requirements of the national retail Hardware and implement associations.

Freight Rates.

J. R. Van Cleve, president of the Oklahoma City Hardware and Manufacturers' Club, gave an interesting and instructive talk upon "Freight Rates." He referred to a provision of the new constitution, which provided that there should be a corporation commission, composed of three members to be elected at the general election, and who are to serve six years, they to have charge of all transportation matters in the regulation of freight rates. Mr. Van Cleve quoted rates on different commodities which showed the excessive rates Oklahoma City is obliged to pay, as compared with Kansas City, Mo. He suggested that in connection with the above commission one member should be a shipper who has had a large experience in freight matters, and another a man well versed in railroad rates and in handling commerce. The commission should also have a legal adviser.

Mutual Insurance.

The entire session on Wednesday morning was given up to the discussion of mutual insurance. This subject was presented to the members in an interesting address by Glen Walker, who is officially identified with the Reciprocal Underwriters of Fort Worth, Tex., the Millers' Mutual of Texas and the Texas National Fire Insurance Company. Following his address Mr. Walker invited those present to ask any questions on the subject that occurred to them. As a result a good deal of discussion ensued, and much information was elicited. A motion was offered and carried that before the adjournment of the association a Committee on Insurance should be appointed, to take such steps as might seem wise to secure proper legislation, with a view to organizing a company. This permanent committee consists of W. J. Pettee, Oklahoma City; J. N. Johnston, Waurika, and George Brett, Ponca City.

How to Whip the Catalogue House.

N. S. Darling, president of the Oklahoma Sash & Door Company, made an address in which he suggested means and methods for fighting catalogue house competition. Mr. Darling urged the merchants to take pride

in their place of business, and to keep it as clean and attractive as possible. He said there was no one, no matter how untidy and shiftless he might be, nor how little disposed to make a good showing for himself, but would appreciate the spirit of a man who kept his place in a clean, orderly shape, and the more attractive it was made, the more trade he would command.

During his talk Mr. Darling made evident his own loyalty to the retailer, and gave some very amusing instances of attempts made to obtain from him supplies for building, &c., by the consumer, to avoid having the goods go through the hands of the middleman. He urged the merchant to advertise in his home paper and help to support the paper, which they could not do without, yet which too often received nothing but the subscription price from the merchant. He showed that the publishers could hardly afford to refuse advertising from mail order houses when their own townspeople did not patronize them. In closing, Mr. Darling said:

My entire talk this afternoon has been a plea for the old town and the town that is new that will be old. Years have swept away since you came to seek your fortune in the new country. Do you ever go back to the old town? Perhaps your father is there, and on one of these summer days you go back to the dear old town, where you spent your happy boyhood, and your old father meets you at the station, and what pride and pleasure he takes in your coming, and what pleasure you derive from being once again in the old spot and seeing once more the friends of your boyhood. When evening comes you walk up the business thoroughfare and note the few changes which the years have brought. You see quite a crowd in the court house square, and wonder what is the cause of the gathering, until suddenly you remember that it is Saturday night and remember that always on Saturday night there is a concert—and you see there in the midst old Si Carpenter, and he is playing the old snare drum you remember so long ago. You stop at the town pump and take a drink from the long handled dipper, so like the one you remember that you are almost persuaded that it must be the same one, until you remember how many years it is since you last quenched your thirst there. You watch the crowd—the old and young in a happy throng—there is the old grandfather and here the happy young mother wheeling a baby carriage before her, and such an interest as each seems to feel in the other, all the way through the merry crowd!

Years are slipping away, and soon you and I will be old, and perhaps we will go down to the station some night to meet our boy coming back to the old town and bringing his bride that she may know, too, these dear old friends of his. Shall we build here in this great Commonwealth of ours a community that shall have mutual interests, or shall we let price be considered only? We have heard for years that we fed the cow in the West and she was milked in the East—shall we continue to do so?

Window Dressing.

A paper on "Window Dressing" was read by Frederick Pfaff, Anadarko, as follows:

I do not believe any wide-awake business man can afford to let his show windows lie idle. All the other classes of advertising have their value, but the class that brings the whole matter right up to the prospective buyer is the window display. I would not for one moment be understood as advocating the policy of dropping all other modes of advertising and relying solely upon window display, but I desire to impress upon my listeners the value of window display as an auxiliary to their general scheme of advertising. Many merchants do not give this method of advertising the amount of attention it should receive and do not seem to realize its full value.

Many think it is unnecessary trouble and somewhat expensive. I do not agree with these ideas. Personally I believe that window display is one of the most valuable methods of advertising, and I believe as a rule that the appearance of a merchant's show windows is an index to his business ability. Many will tell you that it is an easy matter to dress up a window in a dry goods store, but that it is a difficult matter in a Hardware store. I realize that at times it requires a great deal of ingenuity to get a really attractive window, but in this, as in many other things, "practice makes perfect."

Put One Person in Charge.

I believe it is a good idea to select one person in a store to look after the dressing of the windows. If every one has a finger in the pie it will certainly be spoiled. If it is left to one person, he will soon begin to take a pride in the matter, and the windows he turns out will be trade getters.

After Effects.

Do not expect immediate results from every window you fix up, for if you do you are sure to meet with disappointment. Many a time you will get up a window which is very attractive, but right at the time you cannot see that it is bringing you any trade, but some time afterward a customer will come in and ask for one of those hatchets you had in your window some time ago, or a set of those sad irons you had in your window last fall. I sold 25 or 30 sets of sad irons in one week as a result of an ad. I had in my window some weeks before. I made as attractive a showing of them as I could, and did not get any direct result, but it came in time.

The chief value of the window display lies in the fact that it brings the prospective buyer face to face with the article to be sold and usually leaves a lasting impression with him.

Size of Window.

One fault with many in preparing window displays is that they do not have their windows properly built. They are either too small or simply have a small platform built in them, and they are not boxed up, and as a result you cannot properly show your goods. For ordinary Hardware display a show window should be about 8 ft. square, floor measurement. The floor in the window should be elevated to the bottom of the glass. The window should be boxed up all around so as to be as nearly dust and fly proof as possible. The ceiling should be about 7 ft. from the floor of the window. A door should be placed in the back large enough to admit the largest article which you will have occasion to place in the window. Of course, in some stores it is impossible to arrange such a window without a great deal of inconvenience. In such a case I can only say do the best you possibly can.

Effective Arrangement.

After constructing your window it is necessary that you arrange your display in a manner that will attract the attention of the passersby and cause them to stop and take notice. When you accomplish this you have begun to make your work felt, but it is still possible that after arranging your window so as to attract attention, the arrangement is not of such a nature as to be a trade getter. It may be that the display is so confused that the observer cannot be converted to your cause by it. Quite often you will see windows in which the trimmer has tried to make a display of what seems to be all the articles carried in stock. As a rule, this class of windows does not pay.

One Line at a Time.

To make the display most effective you should only show one line of goods at a time. If you desire to make a Cutlery display, do not sandwich it in with a display of Builders' Hardware. If you want to make a display of Builders' Hardware, don't mix it up with a display of Harness. Or if you wish to make a display of Ice Cream Freezers do not mix them with the display of a Range. Take one article or a number of articles belonging to the same class and make the display such that after looking at it the prospective buyer will have that article or class of articles well impressed upon his mind. Otherwise, the prospective buyer will only take a casual look at the different articles and walk away without having received a strong impression of any of them.

Show Cards in the Window.

A window display can be greatly strengthened by the use of show cards. These should be neat and call attention to the display in a brief and clear manner, and it is well to have a neat price card showing the price of each article. A great deal of care should be taken in the preparation of these show cards, and, above all things, they should be neat. A hand painted card is much to be preferred to cards printed with a rubber stamp on a piece of old card secured by tearing up a pasteboard box. The latter has a tendency to cheapen your window and destroy its artistic effect. Good cardboard can be secured at any printing office at a very reasonable price. By a little practice any window trimmer can learn to make a very respectable style of letters and figures, and this tends to give a touch of originality to the appearance of your window. If you contemplate making a display of some special line of goods you can usually secure a selection of very strong display cards from the manufacturer or jobber for the asking.

Frequent Changes.

Change your displays often. This is very important. If you leave a display too long people will lose interest in your windows and as a result you will lose the advertising value of your displays.

If you do not already make use of your show windows as advertising mediums, try it when you return home, and

I believe you will soon come to the conclusion that Hardware window dressing pays.

Credits.

"The Credit Business was the subject of a paper by M. C. Hale, Tulsa, which was as follows, in part:

As a rule the Hardware merchant sells goods on credit without any note or anything to show for it except an open book account bearing no interest. I dare say that there is not a merchant here who has not lost money every year by selling goods to people who were not entitled to credit. Why do we take these chances? If our merchandise were converted into cash we would not think of loaning it out without good collateral. I believe there is not a Hardware merchant in the two territories but can turn to his ledger and find plenty of accounts where he has sold goods to people who couldn't go to a bank and borrow a dollar.

Credits Should Be Considered Cash.

In a great many instances a merchant's stock of goods represents his entire capital, and that merchandise, which is his money, should never leave his shelves, unless he sells for cash, or on credit to a party to whom he would be willing to loan that much money. At least 75 per cent. of the failures in the retail business are caused by a slack credit business. Competition is becoming so keen nowadays that in our eagerness to sell goods we all take unnecessary chances. With money demanding the high rate of interest it does in this part of the country, we cannot afford to give more than 30 days' time on our goods.

Few Merchants Realize the Cost.

I believe there are very few merchants who realize what it costs them to do a general credit business. A merchant who carries on his books an average of \$5000 is in my opinion running his business on \$2100 more expenses than the merchant who does a cash business. I have itemized this expense as follows:

Interest on money tied up in accounts.....	\$500
Cost of extra bookkeeping.....	600
Cost of collecting.....	300
Goods which are forgotten to be charged.....	200
Accounts lost.....	500
Total.....	\$2,100

Of course, the accounts lost are too hard to estimate. One might have the good luck to lose only \$100, and he might lose \$1000.

A certain amount of credit business can be done without extra cost of doing business. I know of concerns that do from \$40,000 to \$50,000 worth of business a year and don't have more than \$1500 on the books at any one time. We all do more credit business than is necessary.

I Have Lost More Business

by crediting people once that never came to my store to trade afterward than I have by making people pay cash that wanted credit. As an illustration of this, a farmer who has been a good customer of mine for several years, having been refused credit on a number of occasions, but still traded with me and paid cash for his goods, came in one day when it was raining and wanted a set of wagon bows so he could cover his wagon before going home. He said he would be in the following Saturday and pay me. That was three months ago, and he hasn't been in my store since, but trades with my competitors. I would have been money ahead if I had given him the wagon bows. It has been my experience that when a dead beat gets in debt with me I not only lose the account, but his trade as well.

A Great Temptation.

The American people seem to delight in seeing how much business they can do upon other people's money, and in this new country which offers such an opportunity for investment it is a great temptation for people who are well to do to invest every nickel they can get hold of and stand off their store bills. I say that it is a great temptation. I wish to add that it is being practiced entirely too much for our own good.

I would rather have a man break into my store at night and steal goods than to buy goods of me with no intentions of paying for them, and I believe I voice the sentiments of this convention when I say that we should make a united effort to get the Legislature of our new State to give us some laws to regulate this great evil.

In the discussion which followed, Mr. Ingle explained a system his firm had adopted when they began business in the little town of Cestos, Okla. He said they started a system of bookkeeping and looked after it closely. They balanced their books every month and sent a statement of the account. If it was paid, all right; but if a man

ran up an account of \$5 or \$10 every month and did not settle then they sent a statement with a notation at the bottom to the effect that unless the account was paid promptly it would be impossible to extend future credit. This enabled the firm to make many collections that otherwise would be impossible.

Profit Protection.

A valuable paper under this title was read by Ben F. Ridge, Duncan. It was as follows, in part:

Every intelligent act of our lives has a controlling purpose back of it. When we engaged in the Hardware business our purpose was to sell goods at a profit, thereby earning a living and, if possible, accumulating more money or property than we had at that time. I believe this is a fair statement of the purpose for each of you being in the Hardware business, yet some men who are in this business by their acts and words would lead us to believe that such was not their purpose. They seem to have no higher purpose than to beat the other fellow, without regard to results either to themselves or on the business in general. I have in mind one man who is, or claims to be, selling Hardware at 10 per cent. profit with no other thought, it seems to me, but to spite the dealers of his town. He cannot hope to make anything for himself. The regular dealers are going on paying just as little attention to him as possible. It is a hard matter to reach a man of this character, because he began the Hardware business with the wrong purpose in view.

Local Understanding.

Where there is a common purpose among the dealers to make a profit on what they sell we have a basis on which to work. With this common purpose in mind local dealers may come together and discuss the question of profits on various articles which they sell, and, while not violating any antitrust law, come to an understanding as to what profit should be made on such articles, and without any agreement to establish such prices go back to the stores and act in accordance with good business judgment and advance prices on goods which are not bearing a sufficient profit, and, if in comparing notes, he finds that he is too high on some things a good business man would lower his price to meet competition.

A Varying Percentage.

In figuring profits many dealers do not take into consideration that some goods will bear a greater percentage of profit than others. For instance, they figure the same per cent. of profit on a Buggy that they do on a Wagon. Wagons are usually sold on a small margin, and if such a dealer sells Buggies on the same small margin he will no doubt sell more Buggies, but his business will not be satisfactory to himself and will be very annoying to other dealers who have the wisdom to try to get better profits out of the Buggy business than they can possibly make on the Wagon trade.

25 Per Cent. Gross on Entire Stock.

I think that as a rule 25 per cent. gross profit as an average on all goods sold in a retail Hardware, Implement and Vehicle business is about right, but to undertake to sell a Shelf Bracket at the same per cent. of profit as you would a box of Loaded Shells is absurd; yet some dealers, very few, I think, however, do that very thing. The point I want to make is this: that we must mark our goods to the best advantage in order that we may round up a gross profit of 25 per cent. on the entire business.

Differentiating Sales.

What then should be the basis in marking goods to show a satisfactory profit? There is no iron clad rule, but to mark goods intelligently, I should say that a dealer should figure his Wagon, Buggy, Implement, Barb Wire, Hog Fence and Hardware sales separately as near as possible. He knows that he must sell Barb Wire and Wagons on a very small margin. He knows also that many Implements are sold at 10 to 15 per cent., such as Turning Plows, Listers, &c. He knows, too, that a great many of his Implements and Buggies, cannot be sold for more than 25 per cent. profit. With all this in mind, the man who has learned to look well to the protection of that vital part of his business which we term profit will, where an article looks well and will bring a better price, make his margin greatest, in order to even up on goods which he is selling below his standard of profit.

Is This Habit Legitimate?

Is it right? I think so. It is at least expedient. Of course in figuring profits a dealer must also be thinking of what the dealer across the way is doing. We must figure to meet competition, but if the other fellow understands upon what basis you are figuring, and he, too, is

in business to make a profit, his figures will probably not be very far from those you make yourself for your own business.

A Bad Practice.

Another thought I wish to drop in right here is this: Many dealers, and perhaps all at times, have a habit of telling customers just what goods cost them. Now, I think this is a bad practice for at least two reasons: First, because it gives the customer information to which he is not entitled, and, second, because about 9 times out of 10 he will think the dealer is lying to him, and he loses confidence, where confidence was intended by the dealer. I have often thought that if a customer really knew how much profit he was really paying me on some articles he would call me a robber straight out; but, on the other hand, if he knew how little profit I make on the great bulk of goods that I sell, he would proclaim me a benefactor to the race. So I think it best to keep our costs to ourselves and not try to make people believe we are doing business on no profit. We should take the position that we are entitled to the profit we are making. If we are not entitled to it, then our business is illegitimate and we should seek other vocations.

Goods Which Have Advanced in Price.

Another question that is, or should be, agitating the minds of all the dealers at this time is this: How am I to get the advance on goods, which I have to pay? Should I just add the advance cost to my regular selling price or should I get my regular per cent. of profit on the advance? It is evident to every thinking person that if I have been selling a cultivator for \$30 for which I paid \$25, and the cost price is now \$27.50, I must get more than \$32.50 for the same cultivator, or not make the same per cent. of profit. I would make the same number of dollars on this particular cultivator, but I would not be making the same per cent. on the money invested. We should always figure profit by per cent., and not in dollars and cents. How many of you are getting the advance on wagons? We will say wagons have advanced \$5—most of them have advanced even more than this—have you just advanced your price \$5? If you have, you have done an unwise thing, for two or three reasons: First, because you are entitled to a profit on the increased investment, and second, because if there is a general advance on all lines of goods we must advance our prices in accordance with prices we have to pay for things that we consume ourselves. How many of you have thought of this phase of the subject? If it costs me \$100 more to live this year than it did last, and I believe it will cost more, and I don't advance my prices so as to cover this extra expense of living, then I will fall short of my last year's increase in wealth just this \$100, provided my business is the same in every way.

After All the Best Way to Protect Profits

is to maintain prices. I do not mean that dealers should get together and fix prices. But each dealer should have a fair understanding as to what a fair margin of profit is, and mark his goods in accordance with that knowledge and then stay by his price. It is an easy matter to cut a price but a very difficult matter to re-establish that price. If you are only making a legitimate profit—and certainly no Hardwareman should want more—it is positively wrong for you to cut a price. You had better just make your customer a present of something if you must make any concessions to make the sale. You wrong yourself in the first place giving your customer something to which you are entitled, and secondly you wrong the great army of people, it may be, who have walked to your counter, paid the price you asked, and made no complaint.

There is nothing so destructive to profits as price cutting. It is a foolish habit, a relic of barbaric methods and has no place in modern merchandising. If your price is not right make it right, and then stand by your guns.

The best means to bring about the ends which I have indicated as desirable are local organizations. Dealers become friends instead of enemies after mingling together and talking matters over. A feeling of good fellowship is established, and we come to realize that our competitor is not the bad fellow we had imagined. I can recommend the local organization as a panacea for all the ills our business, in a local sense, is heir to.

Election of Officers.

The following officers were chosen for the ensuing year:

PRESIDENT, William Murdock, Ralston.

VICE-PRESIDENT, B. F. Ridge, Duncan.

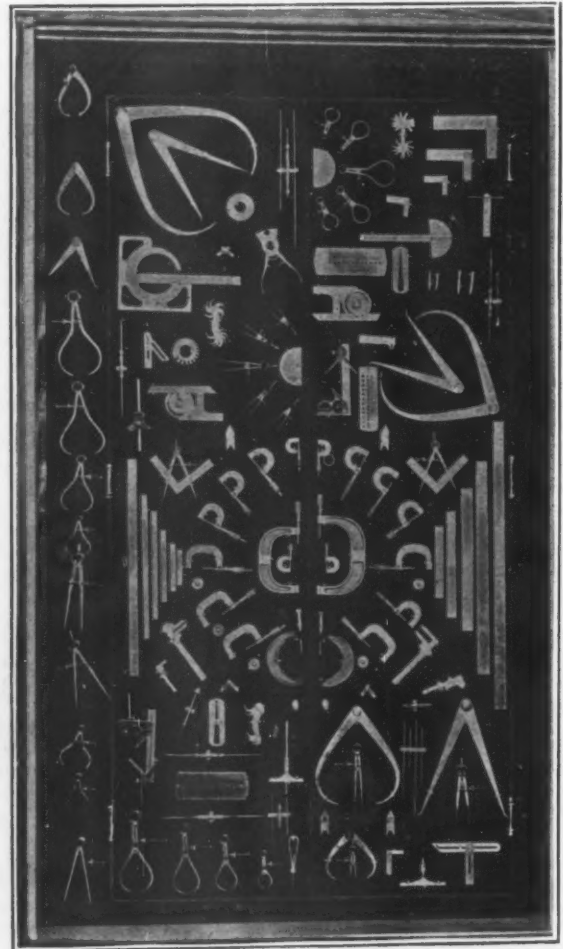
SECRETARY-TREASURER, D. C. Patterson, Oklahoma City.

The Board of Directors is constituted as follows:

President Murdock and Vice-President Ridge, ex-officio; Frederick Pfaff and W. W. Storm, four years; O. A. Smith and W. J. Pettee, three years; M. C. Hale and H. S. Ferbracht, two years; Mont Frantz and J. B. McAles-ter, one year.

WALL CASE OF MACHINISTS' TOOLS.

IN the well-known and long established Hardware store of Tracy, Robinson & Williams, Hartford, Conn., is a handsome and convenient wall case for accommodating Machinists' Tools, reproduced herewith. The cut merely shows the cloth covered folding doors in front of the



Wall Case of Machinists' Tools.

shelves, which are used for displaying a complete line of samples. These doors are inclosed by a glass front. Behind them are tiers of shelves quite close together on which the stock is kept in original boxes, with labels, manufacturers' numbers, &c., on their outward ends. The case is a very convenient one to sell from, besides being economical of space and affording an effective method of sampling this important line.

At the annual meeting of the Fulton Machine & Vise Company, Lowville, N. Y., recently held, the following directors were elected: C. Fred Boshart, James Nefsey, M. A. Stoddard, A. R. Gebbie, A. L. Stoddard, C. D. Moore and E. W. Fulton. It was determined to increase the capital stock of the company to \$50,000. The Board of Directors elected the following officers: A. L. Stoddard, president; C. Fred Stoddard, vice-president, and E. W. Fulton, secretary and treasurer. The company has closed a contract for a new plant, and work has already been commenced. The building will be of concrete blocks, two stories high and modern in every respect. It will be erected on the old site, and contracts have already been let for all the machinery that will be needed. The company expects to be in a position to fill orders about September 1.

DEATH OF JOSEPH B. SARGENT.

JOSEPH BRADFORD SARGENT, president of Sargent & Co., died at his home in New Haven, Conn., shortly after noon, Monday, 15th inst., from the effects of a cold contracted two months ago, which his system, at such an advanced age, was unable to throw off. While Mr. Sargent's extreme age had necessitated a somewhat less active supervision of the company's affairs during later years, he had still maintained a thorough oversight in important matters at the works, and was always actively engaged at a period when most men much younger would delegate such burdens to others. He was especially interested in the additional factory buildings now being erected, keeping in close touch with the progress made, until he was confined to his home in May. The sturdy habits of a strong personality extending over nearly a century of time had become second nature, and these ingrained characteristics continually manifested themselves, even during his illness, probably retarding a recovery that would have been difficult at best.

Joseph B. Sargent was born December 14, 1822, at Leicester, Mass., near Worcester, to which some of his ancestors had removed in 1741. In the parish registers of Northamptonshire and of the city of Northampton, England, can be found the recorded ancestry of the Sargent family, from Hugh Sargent of Courteenhall in 1554 to William Sargent, the immigrant ancestor who, with his family, emigrated from Northampton to Boston, Mass., in 1638, settling at Mystic-side, a suburb of Boston, later added to the town of Malden and now known as Everett. In Northampton William Sargent was a manufacturer and merchant, but on reaching Boston he registered as a planter, buying land at Mystic-side and becoming a farmer. In England his father and brother Joseph were mayors of Northampton.

The father of J. B. Sargent, whose name was Joseph D. Sargent, entered into the manufacture of Hand Cards during the second war with England, 1812-1814, and continued in the business most of the time until his death in 1849. Mr. Sargent's mother was active in the abolition movement in Boston, co-operating with William Lloyd Garrison and Wendell Phillips.

From the age of 7 for 10 years most of Joseph's life was devoted to the acquisition of an education at the Leicester academy, the summer intervals being passed in almost every kind of work on his father's farm. As a boy Mr. Sargent had opportunities for enjoying an easy life at home, but he preferred to work for himself. In 1840, in his eighteenth year, he obtained a situation in one of Boston's retail dry goods stores at a wage of \$1 per week for the first year, that store having since become the present Jordan-Marsh Company. Among his duties were sweeping the store, care of the furnaces and carrying bundles.

His rise from office boy was rapid, and after six months had elapsed his salary was increased to \$400 per year or approximately \$8 per week. In the third year, over the heads of 40 clerks, some of whom had been employed there for 20 years, he became the firm's buyer.

In 1843 he went into the general store business in Georgia, where he remained until after his father's death in 1849, when he sold out and went into business in New York City as a commission merchant, dealing principally with his Southern friends in trade.

In 1850 he purchased a half interest in the manufacturing business so long conducted by his father, and shortly after bought the remaining half interest, becoming sole owner. His place of business in New York for several years was at 24 Cliff street, occupying the upper portion, the lower floors being used by Russell & Erwin. One of his younger brothers managed the factory at Leicester.

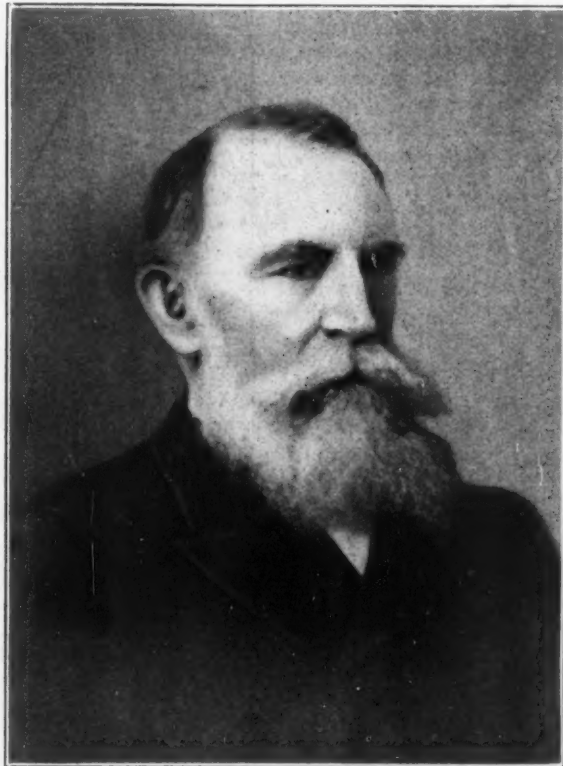
While manufacturing on his own account, Mr. Sargent sold as agent the goods of other producers of Hardware. As business developed his brothers became interested in it, and the house removed to larger stores from time to time on Beekman street, Chambers street, and finally as at present, to Leonard street.

Among the manufacturers whose goods were sold was the Peck & Walter Mfg. Company, New Britain. This house in 1852, to obtain more capital, formed a joint stock corporation capitalized at \$100,000, with \$50,000, mostly in property, paid in. The company's business was financed largely by borrowing from banks. In the money panic of 1857 it got into serious difficulties, owing \$42,000 advances on its stock in the Sargent store in New York. To protect his interests it became necessary for Mr. Sargent to take over the entire business, thus becoming permanently a manufacturer of general Hardware without, it is recalled, ever having spent a whole day in a factory prior to his going to New Britain to assume charge of the business of the company. He continued the business successfully in New Britain until moving it to larger quarters in New Haven, where it constantly expanded on substantial lines, as indicated by the immense plant of to-day.

Mr. Sargent married January 17, 1848, Elizabeth C. Lewis of Macon, Ga., who died September 25, 1874. His second wife, whom he married April 22, 1878, was Florence W. de Karajan. He was the father of 11 children, of whom six were boys, all of whom except two survive him. Mr. Sargent had identified himself closely with the public welfare and general interests of New Haven. For six years he was one of the selectmen, for two terms a member of the Board of Public Works and Mayor from 1891 to 1895, inclusive. He traveled much, his first trip abroad having been made in 1873, since which time he has visited Europe on several occasions.

Notwithstanding Mr. Sargent's prominence as a manufacturer he was long a champion of free trade, taking an active part in the discussions of that important economic question, both in writings and addresses. He also took a deep interest in other economic subjects, being, it is said, the first Mayor of a New England city to pronounce in favor of city ownership of public service utilities, a position that was widely commented on at the time.

In the death of Joseph B. Sargent the country loses one of its eminent manufacturers and a public spirited citizen; a man strong, competent and resourceful, of

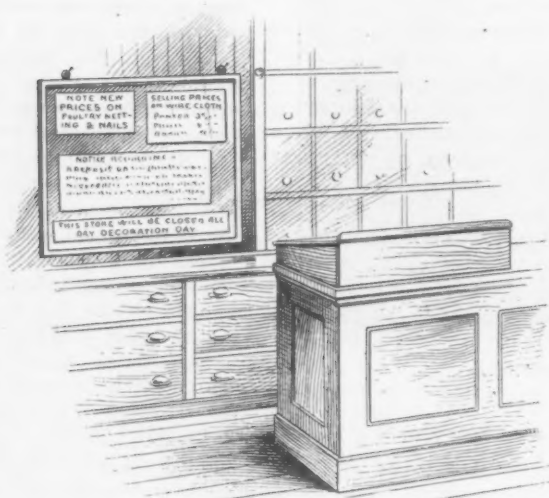


JOSEPH B. SARGENT.

strict integrity and high character. He occupied an almost unique position in the trade with which he was immediately identified. His business career measures the development of Hardware manufacturing in this country, to which he personally, and through the great house of which he was the founder, so largely contributed. Some of the important elements of his notable success are to be found in his ability, his clear sightedness, his calm and balanced judgment, his inflexible will, which enabled him to carry out many a difficult project; his wise choice of associates and subordinates, and his rare capacity for work. The circumstances, too, of the early days in which his career began were favorable for the development of the great industry with which his name is associated. Though he occupied high positions of trust and responsibility and gave his attention to important projects not immediately connected with his business, his great ambition was the establishment and strengthening of the house of Sargent & Co., in whose success he took great satisfaction and for whose future development he was continually planning. With this end in view he created and organized a thoroughly trained and competent staff, including his sons and other officials, on whom will devolve the conduct of the company's affairs and the task of perpetuating and carrying forward the great business so soundly established, which remains a monument to his memory.

CLERKS' BULLETIN BOARD.

IN a store where a considerable number of clerks are employed there are obvious advantages in having some convenient way of communicating information to the entire crew at once. This requirement is met by



Clerks' Bulletin Board.

the John E. Bassett & Company, New Haven, Conn., by establishing a clerks' bulletin board, on which are tacked up notices of interest to the working force. The nature of the information promulgated in this way will be understood from the following characteristic bulletins:

NOTICE REGARDING SPECIAL ORDERS.

A deposit of 50% is required on all special orders for goods not usually carried in stock ordered by people not carrying accounts with us. No exception should be made to this rule except by permission of the office.

NOTE NEW PRICES on
POULTRY NETTING
and NAILS.

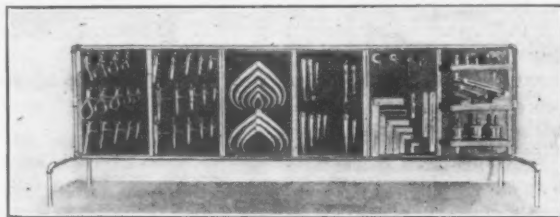
THIS STORE WILL BE CLOSED
ALL DAY
DECORATION DAY.

SELLING PRICES ON WIRE SCREEN
CLOTH.
Painted, 3c. sq. ft.
Pearl, 5c. " "
Bronze, 10c. " "
Painted in Full Rolls, 2c. sq. ft.
NOTE CHANGE IN PRICES!

Notices are usually typewritten and look very much as indicated above. Short and important bulletins, however, are sometimes boldly lettered with pen and ink or with a brush.

PIPE FRAME FOR SAMPLE BOARDS.

THE accompanying cut illustrates a fixture for accommodating samples and stock of machinists' tools, &c., installed in the establishment of John B. Varick Company, Manchester, N. H., by J. H. Asselin. The frame is simple and could be easily constructed in any shop with 30 or 40 feet of pipe and a few fittings. The boards on which the goods are hung from Wire Shoulder Hooks are common Bread Boards covered with black cloth. They have short pins driven into the center of their



Pipe Frame Accommodating Reversible Sample Boards.

upper and lower edges, which fit into sockets drilled into the parallel lengths of pipe forming a swivel bearing. Thus the boards may be reversed at will, as indicated by the position of the right hand board in the cut, and the rack may be erected against a wall or in a showcase which is accessible only on one side. Some of the boards are used for samples alone, but others hold stock to sell from, as in the case of tools so small that several can be accommodated on one hook.

THE DEVED & SONS SASH WEIGHT COMPANY, Baltimore, Md., has been incorporated with a capital stock of \$10,000. This corporation has succeeded to the business formerly conducted by Deved & Sons Foundry, manufacturer of Sash Weights and Hard Iron Castings. The officers of the new company are George L. Deved, president and treasurer; Louise Deved, vice-president; G. Fletcher Deved, secretary, and George C. Deved, superintendent.

Correspondence.

CONSISTENCY OF THE RETAIL HARDWARE MERCHANTS.

To the Editor: It is a serious question with many manufacturers who have in the past distributed their goods through the jobbers to the retailers who are now making unreasonable demands whether it would not be more profitable to ignore the jobber and retailer entirely, join hands with the Postal Progress League, secure a domestic Parcels Post, and then quote their goods direct to any point in the United States lower than now sold by the retailer and at a higher price than obtained by manufacturers from the jobber, and thus the manufacturer would make a greater profit and free himself from many of the annoyances he is now hampered with.

The retailer demands that the manufacturer and jobber sell goods through "legitimate" channels only, and defines the "legitimate" channels as the retail Hardware stores. When they demand this should they not confine themselves to "legitimate" Hardware only?

Pages have been written and jobbers censured and even boycotted because lumber dealers sold Builders' Hardware, and I know positively that there are more regular Hardware retailers selling Sash, Doors, Blinds, Building Paper, Lime, Cement, Hair, Plaster, &c., belonging to the lumber man's "legitimate" line, than there are lumbermen selling Builders' Hardware. Where is the reason in such a complaint from the Hardwareman?

This communication applies largely to the territory north of the Ohio and west of the Mississippi Rivers, as in the South, Hardware is largely sold by general stores.

Taking Up Foreign Lines.

During the past 20 years no class of merchants have added goods entirely foreign to their line as fast as the "legitimate" Hardwaremen, and they advocate at their conventions the addition of "outside profitable lines"; yet the moment the harness maker adds Shovels and Forks, the Hardwareman is shocked and tries to have the jobber boycotted who sells this innocent harness dealer, and a tremendous shout is heard all over the land. Yet within the past year nearly all the large jobbers have completed their lines of nearly everything the retail harness maker has to sell, such as full sets of Harness, Halters, Whips, Fly Nets, Blankets, Robes, Saddlery, Hardware, &c., and the retail Hardware trade is fast taking up the line.

Has not the harness maker a just cause for complaint? What effect would his complaint have on the retail Hardware trade?

When the retail Hardwareman complains of the harness maker adding Hardware, it makes the Hardwareman appear ridiculous and as selfish as a spoiled child.

One will find in very, very many "legitimate" Hardware stores to-day Clocks, Watches, Cameras, Photographic Supplies, Baby Carriages, Harness, Whips, Fly Nets, Blankets, Saddlery Goods, Robes, Fur Coats, Lamps, Crockery, Silver Ware—Flat and Hollow—and a thousand and one other things that are not "legitimate" Hardware and belong to the druggist, the shoe store, the harness man or the jeweler.

The retail Hardwareman is shedding no tears or even expressing regret because in the past few years he has driven the Gun store almost entirely out of business. Twenty-five years ago nearly every town and village had its gunsmith and Gun and Sporting Goods store; to-day not one town in a 100 with a population of 20,000 or under has an exclusive Gun or Sporting Goods establishment—all due to the aggressive Hardware retailer.

Premium Hardware.

The retailers at the recent national convention held in Boston, I am told, appointed a committee to confer with the manufacturers and jobbers regarding Hardware sold for premium purposes. Show me one retailer who has refused to sell Hardware for premium purposes and I will show you 500 who stand ready to sell anything in their stock at cut prices for premium purposes,

providing the quantity ordered is large. If it is wrong for the manufacturers it is equally wrong for the retailer. Why don't they "practice what they preach?" And, by the way, the jobbers have always solicited premium business, even cutting prices to get it, and 85 per cent. of all premium orders are sold by retailers and jobbers.

I have often heard an officer of a Hardware jobbing house boast of selling the largest bill of goods his house ever sold, and that he would undoubtedly hold the record for many years to come, and all the goods were for premium purposes, to be absolutely given away.

A few jobbers, when these propositions are shown up, immediately get pious and "play to the galleries" for effect only, and if the retailers could see their underground railroads they would take no stock in their piety.

Have the retailers or jobbers any right to censure manufacturers for doing what they themselves are doing until they first reform, and with a ratio of 8 to 1 do the retailers not make themselves appear absurd to first jump on the manufacturers?

Uniform Prices.

The retailers advocate even prices for the same classes of trade, and again let me ask why they don't "practice what they preach?" A retailer has one price for Nails by the single pound and a lower price by the keg to the same customer; one price for a single Bolt and a lower price by the package; and so on through the entire line. The jobber has widely varying prices to different retailers for the same articles. If a retailer wrote for a quotation on 500 dozen Axes he would accept a lower price than on a single dozen; in fact, he would be disgusted if he did not get it, yet the manufacturer is supposed to quote by class only, regardless of quantity, and in a measure they do, and are far more uniform in prices than either retailer or jobber, but when extreme quantities are ordered and co-operation assured the quantity buyer will usually get bottom prices, whether jobber, retailer or catalogue house. Quantity has had an effect on price for time immemorial, and I doubt if any of us see any radical change during our lifetime.

Table Cutlery and Groceries.

Restricting trade or even trying to confine it in "legitimate" channels does not always work out as expected. For instance, I am told that in a large Western jobbing center the Hardware jobbers decided a grocery house had no business jobbing Table Cutlery, although over 60 per cent. of the country retail grocers carry it, and demanded that manufacturers of Table Cutlery should not sell this wholesale grocer or they would boycott their line. This nettled the grocer, who got all the Table Cutlery wanted, and gradually added Tinware, Shelf Goods, &c., until to-day he has quite a Hardware department. The Hardware jobbers and retailers have agreed that the retailer shall buy no goods of this wholesale grocer, and the Hardware jobbers are to sell "legitimate" Hardware retailers only, and the result is the grocery jobber is building up a beautiful business, practically without competition, and adding Hardware to many a grocery stock, as Hardware is more profitable than groceries, and every knock the Hardware people give is a boost for the grocerymen.

Publicity Advertising.

Last, but not least, is the retail Hardwaremen's objection to the manufacturers' publicity advertising. We beg to differ with *The Iron Age* in its editorial on this subject in the issue of July 11, which states: "It would be unfair to the retail merchants of the country to take what was said at Boston as indicating the attitude of the retail merchants generally on this subject." The delegates who attend the national conventions are supposed to represent the consensus of opinion of the various State associations which they represent, and as almost every expression made by the retailers, and some were radical, opposed publicity advertising, and this following several articles in their official organ, "The Bulletin," on similar lines, could but indicate to all their

opposition, and clearly proves that the leaders intend to make this an issue in the future.

Although much money is wasted in advertising judicious advertising pays and pays well, and some well-known lines that are extensively advertised show conclusively that it is advertising which keeps up their sales. A few years since Royal baking powder has become so well known that the manufacturer decided that further advertising was unnecessary and discontinued it; but within a year the sales of the baking powder decreased so rapidly the manufacturer was forced to renew his publicity campaign and on a larger scale.

We all remember when Warner's Safe Cure, St. Jacob's Oil, and many other articles were quantity sellers and extensively advertised. Advertising was almost entirely stopped and their sales decreased accordingly, and the same applies to very many articles in Hardware and kindred lines, and if the Hardware trade opposes publicity advertising too strenuously manufacturers will look to other than "legitimate" Hardware channels to market their goods and will especially court the day when they can ship direct to consumers by domestic Parcels Post.

Demands Should be Reasonable.

I heartily indorse organization and the Hardware trade can gain much through it, but it will bring them to disaster unless they are more reasonable in their demands and requests.

The associations have often thought that they had accomplished much more than they really had, and when I stated that they were not reducing the volume of catalogue house business 18 months ago, they fairly hooted at the assertion; but statistics proved a few months later that 1905 showed a handsome increase over 1904, as did 1906 over 1905. The catalogue house had simply changed its methods and the Hardware "merchant" had become educated up to meeting this competition, which he did successfully, and the Hardware "dealers" suffered the more.

Hardware retailers must be reasonable in their requests—let them practice what they preach, else their requests will have the same effect upon the jobber or manufacturer as would a sermon preached by an infidel or a temperance lecture delivered by an inebriate. Of late their proposition seems to stand: "Heads I win, tails you lose."

ED. FORD.

MANUFACTURERS' REPRESENTATION IN JOBBERS' CATALOGUES.

To the Editor: The suggestion has been frequently made by both the Hardware jobber and the manufacturer that it would be very desirable to have adopted a uniform size loose leaf catalogue page, the same to have uniform perforations. The importance of this is readily recognized, and if properly agitated might be easily adopted.

While the manufacturer would be called upon to furnish these sheets, and, at first thought, might object to the arrangement, it would in the end be less expensive than the catalogue advertising he is forced to pay for in one way or another under present conditions. Indeed, it is not necessary to gain the manufacturers' consent. Let the Hardware jobber adopt a uniform catalogue sheet and the manufacturer will print his pages accordingly under the pressure sure to be put upon him.

We are satisfied to supply these pages, and know it will be less expensive. The cost of printing is in the composition and the set-up. Afterward thousands of sheets can be run at a slight expense per thousand. Furthermore, the manufacturer would see the utility of keeping his own catalogue up to date. There are many reasons for the thing and none seriously against it.

There are possibly 200 Hardware jobbers in the country issuing their own catalogues. A petition circulated among these houses for signature agreeing to adopt a certain size sheet with the next issue of their catalogue would in a sort while effect the change complete. Other lines more or less kindred to the Hardware trade would follow suit gradually.

CENTRAL WEST.

MAIL ORDER COMPETITION.

If the Local Merchant Would Co-operate With Manufacturers and Wholesalers He Could Meet the Efforts of the Mail Order Houses at Comparatively Small Expense.

BY CLARFIELD.

IN many local Hardware stores printed matter which is furnished generously by manufacturers and wholesalers is absolutely wasted. In other instances it is indifferently given out, and no systematic effort is made to get results from it. These announcements are usually well printed, and they can be made to reap good returns if distributed in the right manner.

It Will Pay the Merchant

to have his name and address printed upon these circulars by a first-class printer. This will insure neat work and uniformity in style, which will lead the reader to believe that the merchant has issued the entire circular himself. It is well worth the difference in cost between such printing and slipshod rubber stamp or cheap printer's work to gain the apparent distinction of issuing individual circulars.

Distributed by Mail.

Every merchant in a small town knows most of his customers well enough to tell which line of goods will apply to the individual needs of each one. He can thus distinguish with reasonable accuracy which circulars to mail to each individual or family. When it is considered that the printing itself costs almost nothing, the postage will make the expense only nominal.

Mail with Regularity.

It is better to mail one or two circulars every week or month than to inclose more under one cover at less frequent intervals. Parcels which carry too much reading matter are frequently thrown aside without having been read, whereas the envelope containing only one or two pointed announcements will receive attention. It is always more effective to reach an individual or a family with a series of comparatively short announcements than it is to attempt to get their trade with one or two advertisements at longer intervals. It is a good plan to assort the printed matter received from the manufacturers, so that a different line can be announced every time matter is mailed and each announcement will reach the reader at a seasonable time.

Inclose in Packages.

Another effective and inexpensive method of distribution is to inclose a batch of printed matter in every package which is taken from the store. This is a good means of getting the announcement directly before prospective customers. Judgment should be used to inclose printed matter of a different class in parcels which are known to go to distinctive classes of people. The household article should be advertised in a parcel which is intended for the home, while the announcement of carpenters' Tools could be placed in a package of Wire Nails.

No matter how such printed matter may be issued, if the plan is systematically and carefully carried out it is sure to be an inexpensive and extremely effective means of increasing trade.

LIVERIGHT BROTHERS, Philadelphia, Pa., manufacturers of Gold Medal Files, are placing before the trade a new File particularly adapted for brass foundries and finishers. This File, which is known as a Brass File, has a special cut, so as to insure a perfect grip on the metal, as well as to release the filings. The firm notes a good volume of general business and is operating its plant at full capacity.

THE GRAND VIEW HARDWARE COMPANY, Grand View, Texas, has been incorporated with a capital stock of \$20,000. The parties in interest are O. C. Walton, J. R. Nelsen and F. E. Davis. The company will conduct a retail business in Shelf and Heavy Hardware, Stoves, Agricultural Implements, Paints, Sporting Goods, Buggies and Harness.

Lockwood & Palmer's Store.

Second Article.

A METHOD of handling Oils and Turpentine which has been found entirely satisfactory is shown in Figs. 5, 6 and 7. An inclined plane, located on the third floor, is illustrated in Fig. 5, at the higher end of which is a 16 x 22 in. cast iron sink. The inclined plane is 6 ft. long, 2½ ft. wide, and 10½ in. high at the highest point. Two

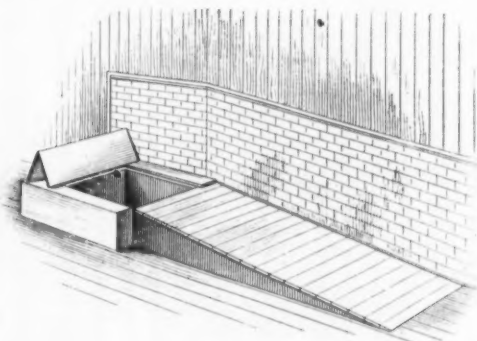


Fig. 5.—Inclined Plane on Third Floor.

boards, set at angles to each other, prevent the barrel rolling off. To the sink coupling is attached a 2-ft. length of lead pipe, extending through the floor to the second story. The inclined plane is against one side of the elevator shaft, which is here protected by brick faced galvanized siding. On the second floor, immediately below, are five oil tanks, holding from 30 to 50 gal. each, part of which are shown in Fig. 6. The tanks

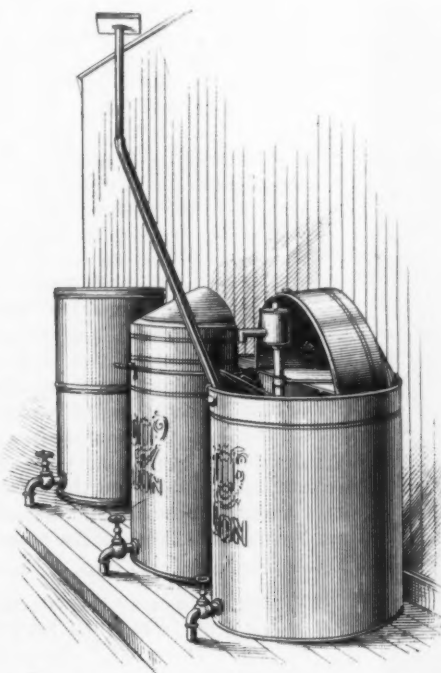


Fig. 6.—Oil Tanks on Second Floor.

have valves connected to iron pipes, one to each tank, which pass back under the tank platform, through the elevator partition and down the inside of the elevator shaft, then through the partition again on the first floor, and terminate in brass cocks, shown in Fig. 7. There are five lengths of galvanized iron corrugated conductor pipe, one for each tank, on the second floor, Fig. 6, each provided with a piece soldered to the upper end at an angle to permit it being slipped over the lower end of the lead pipe, leading from the sink, and extending into an opening in the top of the tank for which it is intended. When a tank needs filling it is connected with the sink pipe, by one

of the lengths of conductor, and a barrel is taken on the elevator from the cellar, or first floor, to the third floor. There it is rolled up the inclined plane and over the sink, the bung is knocked out, and the contents is conducted into the tank on the second floor. By this arrangement but one man is required to handle a barrel from the cellar until it is emptied, and without any par-

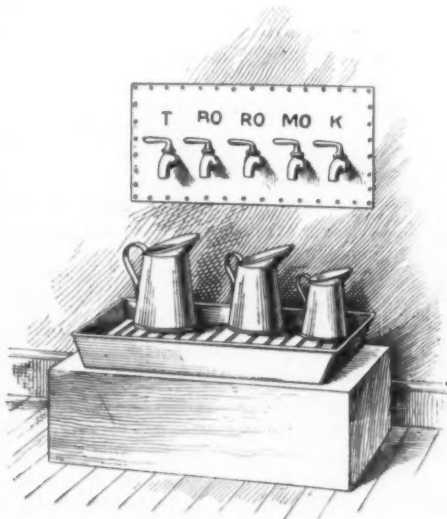


Fig. 7.—Brass Cocks on First Floor, Connected with Oil Tanks.

ticular exertion. In Fig. 7 is shown the faucets on the first floor, connected with the tanks, with drip pan and measures under them. The letters over the faucets indicate what can be drawn from each one, as follows: Turpentine, Boiled Oil, Raw Oil, Machine Oil and Kerosene. This arrangement for handling Oil for retail has been found cleanly and convenient, and was adopted after an examination of many plans in use in other stores.

(To be continued.)

CLOSELY following the announcement that Tom Fritts had sold his interest in the Tom Fritts Hardware Company, Chattanooga, Tenn., to J. A. Caldwell, vice-president of the company, came the information that Mr. Fritts would head the organization of another company to engage in the wholesale and retail Hardware business. Three days later, however, it was announced that as a result of subsequent negotiations Mr. Fritts bought back from Mr. Caldwell the entire stock of the company, thus becoming sole owner of the Tom Fritts Hardware Company. These transactions were conducted without friction or personal disagreement between the parties at interest. In contemplation of further extension of the business and a large addition to the present stock it is the purpose of the organization to increase its capital stock from \$25,000 to \$100,000, all paid in. A new building, 80 x 150 ft., five stories and basement, has been secured with a view to this enlargement, and it is provided with suitable shipping facilities, having switching connections at the rear for direct loading. Mr. Fritts is president and general manager of the company.

TWENTY-SEVEN years ago the Acme Flexible Clasp Company, 2834-2840 Archer avenue, Chicago, was organized to manufacture the Acme Flexible Clasps and other specialties. These goods are still manufactured, but are now so small a part of the company's business that the style of the company has become misleading. Accordingly the name has been changed to the Acme Steel Goods Company. Otherwise the business will continue as heretofore, with no change whatever in management.

ALFRED C. GREENING, president of R. K. Carter & Co., 66 Reade street, New York, returned last week from a short trip to Europe.

Hardware Window Display

Fifteenth Article.

GOOD USE MADE OF WINDOW TOP AND SIDES.

THE Lawn and Garden Goods display of the John E. Bassett & Co., New Haven, Conn., reproduced herewith suggests effective methods of utilizing the space in the upper part of a show window, which many merchants allow to go to waste. In the ceiling will be observed a number of strong Hooks, from which in this display are hung Spades, Rakes, Forks, Turf Cutters, &c. Excellent use of these Hooks, however, is made almost every time the window is dressed. Not only are they used to hang single articles on as in this case, but they will also support hanging shelves and devices for the display of small articles, such as have been illustrated in earlier articles of this series. Fancy lights, pictures and decorations of many kinds may also be suspended from ceiling hooks, adding greatly to the attractiveness of different displays.

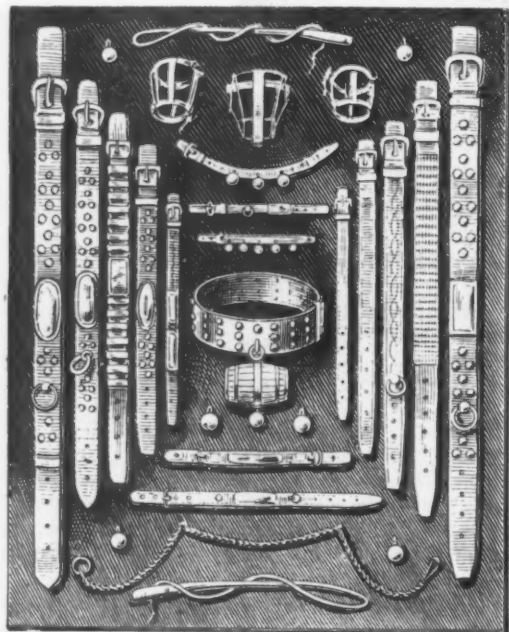
The upper side wall of this window is occupied by a permanent display of Bathroom Fixtures, the wall being covered with white tiled paper, thus setting off the articles to best advantage and showing them as they would actually look in an up to date bathroom. Other lines of which permanent displays could be installed in inaccessible parts of a window will readily suggest themselves to any merchant. Among them might be mentioned Builders' Hardware, Wire Goods, Bright Wire Goods, Padlocks and many kinds of Tools.

No special attention need be called to the goods on the floor of this window which comprise a variety of Lawn and Garden requisites, arranged effectively by the use of

previous article, which occupied the corresponding window on the other side of the store door. On the right is shown one of the pair of vertical front showcase previously described.

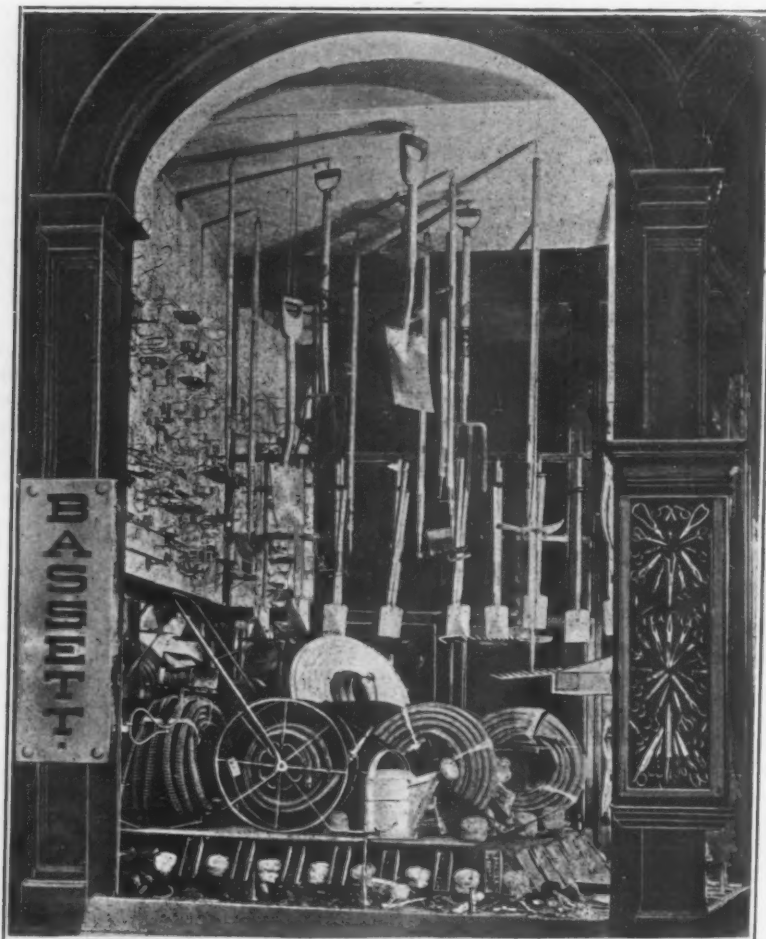
WINDOW SAMPLE BOARDS.

There are a number of lines of goods carried by Hardware merchants which can be nicely displayed in the



Sample Board of Dog Collars.

window by making up attractive sample boards which can be used from time to time. In a previous article we have shown how certain spaces in windows may be used for accommodating interchangeable sample boards, which may be conveniently fastened in place by turn buttons, hooks and eyes, &c. At present, however, we refer to boards which a window dresser might stand in a conspicuous place, either against the wall or in the center of the window with some support behind it. Such boards may also be hung by small chain or cord from hooks in the ceiling. We illustrate herewith sample board of the style referred to, which is devoted to Dog Collars and Furnishings, including Leaders, Whips, Muzzles, Bells, &c., as well as Collars of various sizes and designs. A board like this affords any one looking into the window an excellent idea of the line of Dog Furnishings kept in the store.



Window Display of Lawn and Garden Supplies, Suggesting Methods of Utilizing the Upper Part of a Window.

a raised platform. This display was installed coincidentally with the Lawn Mower display reproduced in a

point. economic reasons, but also from a humanitarian standpoint.

THE Wisconsin Legislature has passed a bill, which has been signed by the Governor, appropriating \$125,000 for the establishment of a binding twine plant at the State Prison at Waupun. This bill was opposed in resolutions passed by the Wisconsin Retail Implement and Vehicle Dealers' Association at its convention held in Milwaukee last February. On the other hand, prominent members of the Wisconsin Retail Hardware Association favored the establishment of such a plant, taking the ground that the employment of penitentiary convicts was desirable, not only for economic reasons, but also from a humanitarian standpoint.

PRICE-LISTS, CIRCULARS, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

LUDLOW-SAYLOR WIRE COMPANY, St. Louis, Mo.: Catalogue No. 31, with list prices and standard gauges of Wire Cloth, and catalogue No. 40, illustrating Bank and Office Rallings, Wickets, Grille Work, Brass Signs, Extension Gates, Window Gratings, &c.

ROCK ISLAND TOOL COMPANY, Rock Island, Ill.: Catalogue relating to Vises for mechanics, blacksmiths, steam fitters, electricians, car builders, locomotive works, gun, typewriter, sewing machine and carriage manufacturers and mechanics generally.

D. M. STEWARD MFG. COMPANY, Chattanooga, Tenn.: Illustrated catalogue descriptive of the new Steward's Dolan Acetylene Burner.

BEAN SPRAY PUMP COMPANY, 171-177 West Santa Clara street, San José, Cal.: Catalogue No. 18, relating to Power Spraying Outfits, Spray Nozzles, Hand and Bartel Spray Pumps, &c., and catalogue No. 20, devoted to the Bean Magic Pumps, &c.

UNION FORGING COMPANY, Union, N. Y.: Catalogue No. 8 of Carriage, Coach and Wagon Forgings, Fifth Wheels, &c.

MURPHY VARNISH COMPANY, Newark, N. J.: General descriptive list of Varnishes, quick drying Coach Colors and Colors in Oil.

ANDERSON COUPLING COMPANY, Portland, Conn.: Pamphlet relating to Lead to Iron Pipe Couplings, Lead Pipe Expanding Pliers, Pipe Connections, Beer Tap Couplers, Turn-More Wrenches, &c.

S. A. SMITH COMPANY, Brattleboro, Vt.: Catalogue D 5, relating to Children's Wagons, Carts, Auto-Wagons, Step Ladders, Rocking Horses, Furniture, &c.

DETROIT WIRE & IRON WORKS, Detroit, Mich.: Illustrated circular devoted to Fencing for lawns, Partition Fences, flower beds, Trellises, Gates; also Wrought Iron Seatees, &c.

WILDER-STRONG IMPLEMENT COMPANY, Monroe, Mich.: Catalogues relating to Silo Fillers, Cattle Stanchions, Land and Lawn Rollers, Clod Crushers and Pulverizers, Road, Township and Snow Rollers, Feed Cutters and Shredders, &c.

HOWARTH REVERSIBLE SASH CENTER COMPANY, 15-17 Gilman street, Detroit, Mich.: Catalogue and price-list illustrating the company's line of Sash Centers, with complete details with each set of illustrations.

F. H. SMITH MFG. COMPANY, Carroll avenue and St. John's court, Chicago, Ill.: Catalogue 1907-1908, devoted to Riveters for tubular and bifurcated rivets, Window Cleaners, Hook and Eyelet Setting Machines, Knife Sharpeners, Screw Machine Products, &c.

SAFETY SHREDDER COMPANY, New Castle, Ind.: Twelfth annual catalogue, illustrating improved machinery for husking corn and shredding stalks; also the Lawter Gasoline 2½-hp. Engine.

KEYLESS LOCK COMPANY, Indianapolis, Ind.: Catalogue No. 2e, devoted to Post Office Equipments, Automatic Keyless Lock Boxes, Post Office Furniture, Bag Racks and Wirework.

EMERSON MFG. COMPANY, Rockford, Ill.: Catalogues relating to Steam Plows, Foot Lift Farm Implements, Walking and Riding Plows, Corn and Cotton Planters, Listers, Harrows, Cultivators, Mowing Machines, Rakes, &c.

WOLVERINE BRASS WORKS, Grand Rapids, Mich.: Illustrated catalogue F, devoted to High Grade Plumbers' Specialties, Brass, Rubber and Leather Goods, Tools, &c.

MARLIN FIREARMS COMPANY, New Haven, Conn.: Illustrated price-list relating to Repeating Carbines, Muskets and Repeating Shotguns in 12 and 16 gauges for all kinds of game; Rigid and Take Down, Lever and

Trombone Actions, Pistol and Straight Grips; Rust Repeller, Ammunition, Reloading Tools, Sights, &c. The design on the colored cover of the catalogue is a realistic picture of camp life.

SIMONDS MFG. COMPANY, Fitchburg, Mass., and 40 Murray street, New York: Illustrated card folder to which is attached a sample of its Culley Flexible Hack Saw Blade. On the cover is shown the company's four factories, two at Fitchburg, one at Chicago and the latest and newest at Montreal. A feature of the card is an addressed form postal card, perforated to tear off and mail, requesting quotations.

REQUESTS FOR CATALOGUES, &c.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM THE ORO FINO TRADING COMPANY, LTD., Oro Fino, Idaho, succeeding L. Stannus. The company carries Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints and Oils.

FROM WENDT BROS., Far Rockaway, N. Y., handling Hardware, Cutlery, Tools, Housefurnishings, Paints, Oils, Varnishes, Wall Paper, Stoves and Ranges.

FROM BIG SANDY HARDWARE COMPANY, which has succeeded the branch store of the Foster-Mead Hardware Company in Paintsville, Ky.

FROM ELLIS WOLFE, who has put in a new stock of goods in Kimmunity, Ill., including Shelf and Heavy Hardware, Stoves, Tinware and Sporting Goods. He also conducts a tin and plumbing shop.

FROM DONNELLY BROS., 1032 Westchester avenue, New York City, handling Builders' Hardware, Mechanics' Tools, Contractors' and Mill Supplies.

AMONG THE HARDWARE TRADE.

Gainesville Tinning & Plumbing Company, Gainesville, Fla., has purchased the shop of Baird Hardware Company.

Glover Bros., 106 South Calvert street, Baltimore, Md., carrying on a wholesale and retail business in Shelf and Heavy Hardware and Agricultural Implements, recently suffered loss by fire, which was, however, amply covered by insurance. The firm had only occupied its new store about two months when the fire occurred.

The store of D. H. Rouse in Lovilla, Iowa, carrying Shelf Hardware, Stoves, Tinware, Paints, Oils and Sporting Goods, has been destroyed by fire, entailing a total loss.

Laurie Hardware Company, El Paso, Texas, has increased its capital stock from \$25,000 to \$50,000. The company handles Shelf Hardware, Stoves and Tinware.

The Adams Hardware & Paint Company, Lowell, Mass., recently suffered about \$2000 loss by fire. The insurance has been adjusted.

Edward Bell has retired from the Bell-Marriott Hardware Company, Delaware, Ohio, to accept a position with the Delaware Chair Company. His interest in the firm has been purchased by John Schaaf, an experienced Hardwareman.

Fatherree & Enfield have purchased the stock of J. R. Blair in Artisia, N. M., and will carry Shelf and Heavy

Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods and Gasoline Engines.

The Cottonwood Hardware & Implement Company, Cottonwood, Idaho, is erecting a new warehouse. The company handles a general line of Hardware, Stoves, Tinware, Agricultural Implements, Paints and Sporting Goods.

Marti & Winzeuried Bros. are successors to J. A. Comer in Windsor, Mo., carrying Shelf Hardware, Tinware, Hand Agricultural Implements and Sporting Goods.

J. S. Thomas, Lexington, Neb., handling Agricultural Implements, Wagons, Buggies and Seeds, is erecting a three-story brick building, which will be occupied as an Implement house.

MISCELLANEOUS NOTES.

Silo Filling Machinery.

Wilder-Strong Implement Company, Monroe, Mich., has put on the market two new sizes of Whirlwind silo filler machines, making a line of six sizes, ranging from 4 to 15 hp. In the roller line the company has this year added a large snow roller, made in several sizes.

Torsion Test Scales.

The Torsion Balance Company, 92 Reade street, New York, has recently put on the market test scales for various purposes. These include cream test scales which are very sensitive, and having no knife edges their accuracy is not interfered with by wear. The scales are made in sizes for one or two bottles and for 12 bottles. Butter test scales are designed for use with Gray's test for determining the percentage of moisture in butter. A grain test scale, for the determination of moisture in grain, is made in accordance with specifications furnished the manufacturer by the Department of Agriculture at Washington.

Steward's Dolan Acetylene Burner.

D. M. Steward Mfg. Company, Chattanooga, Tenn., and Toronto, Ont., is offering the acetylene burner shown herewith. The principal feature in the new tip is that a flat flame is produced through one opening instead of two openings, as in the earlier pattern of burner. For the new burner, it is claimed, that an absolutely ideal and perfect mixture of acetylene and air for combustion is produced with the highest possible illuminating efficiency. It is pointed out that there are no arms or prongs, and that the burner is practically unbreakable. Having but one opening instead of two as heretofore, it is not so liable to clog.



Steward's Dolan Acetylene Burner.

CHARLES F. PAIGE of the retail Hardware firm of Charles F. Paige & Co., Athol, Mass., died at Northfield, Mass., July 11, aged 52 years. He was born in Petersham, Mass., and went to Athol when a young man and established the business that bears his name, which is now identified with the Fitchburg Hardware Company, Fitchburg, Mass. He was one of the most prominent business men of his town. He was a Mason, a member of the Pequaog Club, and was closely identified with the Second Unitarian Church of Athol. He leaves a widow and two daughters.

Rahns' Adjustable Safety Dog Muzzle.

A new adjustable dog muzzle, manufactured by Rahns Mfg. Company, 1035 E. Cheltenham avenue, Philadelphia, Pa., is shown herewith. The muzzles are made in six sizes, of No. 12 or No. 14 gauge tinned wire, according to the size of muzzle. The device avoids the use of rings at the nose, thus making it possible to obtain a perfect

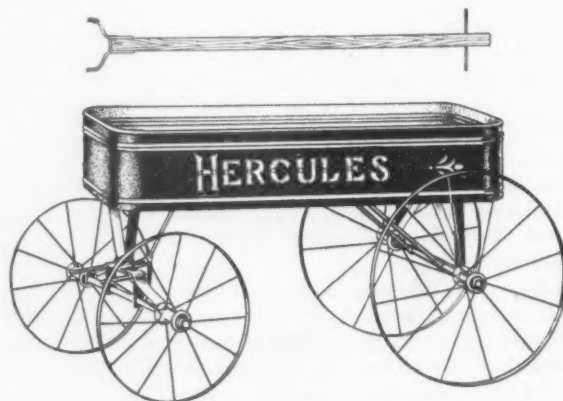


Rahns' Adjustable Safety Dog Muzzle.

fit without irritating any part of the animal's head. The leather head or nose strap, adjustable by means of a buckle attached to the neck strap, also permits of an adjustment to conform to the length of the animal's head, a feature, the maker states, that is only found in this muzzle.

Hercules Extra Heavy All Steel Express Wagon.

The accompanying illustration represents an express wagon offered by the Kirk-Latty Mfg. Company, Cleveland, Ohio, which refers to it as an extra husky wagon for hauling coal or ice and other merchandise, practically useful, and not a toy. The sides of the wagon are of extra heavy sheet steel, beaded, with seasoned wood bottoms, extra thick. The bodies are enameled by hand



Hercules Extra Heavy All Steel Express Wagon.

with brilliant glossy red outside and green inside, and neatly stenciled in aluminum. The front and rear axles and pull irons are finished in black baked enamel. All parts of the gear are of heavy material to secure strength. The wheels are of all steel construction, brightly tinned, having heavy spokes, hubs and rims. The wagon is made in three sizes, with bodies 14 x 28, 16 x 32 and 18 x 36 in., weighing respectively 319, 348 and 417 lb. each. The wagons are shipped in 1-12 and 1-6 dozen crates, and all parts, including the tongue, are packed inside the bodies.

Matchless Pivot Hinges.

The pivot hinge and door guard shown in the accompanying illustrations have been added to the Matchless line of hardware specialties made by the Lawson Mfg. Company, 40 Dearborn street, Chicago, Ill. Fig. 1 shows the lower portion of the hinge, which bears the weight of the door and is fitted with ball hinges. The pivot pin extends down into the base of the cup and holds the door in proper alignment, while the balls of the bearing are secured between two case hardened disks, the contract

faces of which are grooved to receive them. Fig. 2 represents the top attachment, which is mortised into the upper jamb of the door. It is provided with an adjusting

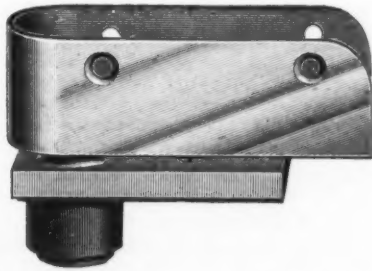


Fig. 1.—Lower Portion of Pivot Hinge.

lever controlled by a screw whereby the pivot pin can be raised or lowered, as occasion requires, in placing or removing the door. Both top and bottom shoes which carry the pivots are made in one piece and are finished in

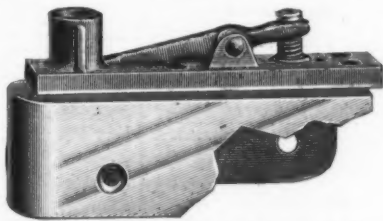


Fig. 2.—Top Attachment of Pivot Hinge.

brass, bronze, iron or gun metal, as desired. The hinge is made without springs, the regular sizes being suitable for doors 2 and 2 1/4 in. thick. Fig. 3 shows the door guard, which is designed to serve the same purpose as the ordi-

toward the door, the stop pin slips into it and limits the opening to the length of the loop. The door may be locked with the same device by throwing the loop inward across the face of the catch and securing it by a turn

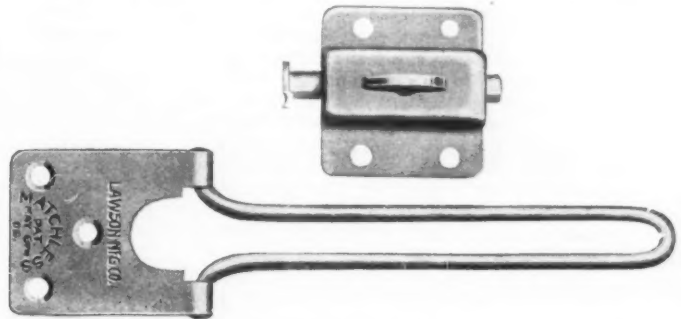


Fig. 3.—Door Guard of Pivot Hinge.

of the thumb screw shown in the illustration. This device is furnished in a variety of plated finishes.

Stevens New Repeating Gallery Rifle No. 80.

J. Stevens Arms & Tool Company, Chicopee Falls, Mass., is offering the No. 80 repeating gallery rifle, as shown herewith, with a few slight changes in the original model. These include supplying a rubber butt plate instead of an aluminum one, a plain trigger guard and reinforcing the tip of the forearm to prevent its checking by fitting it with a blued steel cap. The rifle will handle three sizes of cartridges—.22 short, .22 long, .22 long rifle or .22 Stevens Pope Armory. The rifle will not work the three sizes of cartridges put in the magazine indiscriminately, but only one size at a time. To do this the



Stevens New Repeating Gallery Rifle No. 80.

nary chain guard in common use, and is simple in construction and positive in operation. The wire loop is hinged on its screw plate for attachment to the jamb, while the check plate is placed opposite to it on the door. With the loop standing at an angle slightly inclined

stop is changed when the magazine is empty. The rifle can be supplied for gallery use with a barrel chambered and of a twist for .22 short cartridges at no additional expense. The barrel is 24 in. long, the rifle measuring 41 1/2 in. over all and weighing 5 1/4 lb.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

Linseed, City, raw.....	45 @ 46
City, Boiled.....	46 @ 47
State and Western, raw.....	44 @ 45
Raw, Calcutta, in bbls.....	30 @ ..
Lard, Extra Prime, Winter.....	77 @ 78
Extra No. 1.....	57 @ 58
No. 1.....	49 @ 52
Cotton-seed, Crude, f.o.b. mills.....	42 @ 43
Summer Yellow, Prime.....	55 1/2 @ 55 1/4
Summer White.....	61 @ 62
Yellow Winter.....	61 @ 62
Sperm, Crude.....	59 @ 60
Natural Winter.....	72 @ 73
Bleached Winter.....	75 @ 76
Bleached Winter, Extra.....	76 @ 77
Tallow, Prime.....	60 @ 61
Whale, Crude.....	35 @ 36
Natural Winter.....	46 @ 47
Bleached Winter.....	48 @ 49
Extra Bleached Winter.....	50 @ 51
Menhaden, Brown, Strained.....	32 @ 33
Light Strained.....	32 @ 33
Northern.....	32 @ 33
Southern.....	32 @ 33
Cocoonut, Ceylon.....	9 1/2 @ 9 1/4
Cochin.....	10 1/4 @ 10 1/2
Cod, Domestic, Prime.....	36 @ 38
Newfoundland.....	40 @ 42
Red, Elaine.....	48 @ 51
Saponified.....	7 @ 7 1/2
Olive, Italian, bbls., Yellow.....	85 @ 1.00
Neatsfoot, Prime.....	56 @ 57
Palm, Logos.....	7 @ 7 1/4

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.....	12 1/2 @ 13
29 gravity, 15 cold test.....	13 @ 13 1/4
Summer.....	12 @ 12 1/2
Cylinder, light filtered.....	19 @ 20
Dark, filtered.....	16 1/2 @ 17 1/4
Paraffine, 903-907 gravity.....	14 @ 14 1/4
903 gravity.....	13 @ 13 1/4
883 gravity.....	11 1/2 @ 11 3/4
Red.....	13 @ 14 1/4

Miscellaneous—

Barytes:	
White, Foreign.....	1 ton \$18.50 @ 20.50
Amer. floated.....	1 ton 19.00 @ 20.00
Off color.....	1 ton 13.00 @ 15.50
Chalk, in bulk.....	1 ton 3.00 @ 3.25
In bbls.....	100 lb. @ .35
China Clay, Imported.....	1 ton 11.00 @ 17.50
Cobalt, Oxide.....	100 lb. 2.50 @ 2.60
Whiting, Commercial.....	100 lb. .43 @ .52
Gilders.....	100 lb. .55 @ .65
Ex. Gilders.....	100 lb. .60 @ .65
Putty, Commercial.....	100 lb. @ 1.00
In bladders.....	\$1.70 @ 1.85
In bbls. or tubs.....	1.20 @ 1.45
In 1 lb. to 5 lb. cans.....	2.65 @ 2.95
In 12 1/2 to 50 lb. cans.....	1.50 @ 1.90
Spirits Turpentine.....	gal. @ 60
In Oil bbls.....	60 @ 61
In machine bbls.....	60 1/2 @ 61
Glue—	
Cabinet.....	12 @ 15
Common Bone.....	7 1/2 @ 9
Extra White.....	18 @ 24
Foot Stock, White.....	12 @ 14
Foot Stock, Brown.....	9 @ 11
German Hide.....	12 @ 18
French Hide.....	10 @ 40
Irish.....	13 @ 16
Low Grade.....	10 @ 12
Medium White.....	14 @ 17
Cum Shellac—	
Bleached, Commercial.....	44 @ 45
Bone Dry.....	53 @ 54
Button.....	40 @ 50
Diamond L.....	50 @ 60
Fine Orange.....	52 @ 57
A. C. Garnet.....	46 @ 46
Kala Button.....	35 @ 36
D. C.....	62 @ 63
Octagon B.....	56 @ 57
T. N.....	44 @ 45
V. S. O.....	59 @ 60
Colors in Oil—	
Black, Lampblack.....	12 @ 14
Blue, Chinese.....	36 @ 46
Blue, Prussian.....	32 @ 36

Blue, Ultramarine.....	13 @ 16
Brown, Vandyke.....	11 @ 14
Green, Chrome.....	12 @ 16
Green, Paris.....	12 @ 24
Sienna, Raw.....	12 @ 15
Sienna, Burnt.....	12 @ 15
Umber, Raw.....	11 @ 14
Umber, Burnt.....	11 @ 14

White Lead, Zinc, &c.—

Lead, English white, in Oil.....	10 1/2 @ 10 3/4
Lead, American White:	
Lots of 500 lb. or over, in Oil.....	7 1/2 @ 7 3/4
Lots less than 500 lb., in Oil.....	8 @ 8 1/2
Lead, White, in oil, 25 lb. tin	
pails, add to keg price.....	1 @ 1 1/2
Lead, White, in oil, 12 1/2 lb. tin	
pails, add to keg price.....	1 @ 1
Lead, White, in oil, 1 to 5 lb.	
ass'ted tins, add to keg price.....	1 1/2 @ 1 1/4
Lead, American, Terms: For lots 12 tons and over 1/4¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.	
Zinc, American, dry.....	5 1/2 @ 5 1/4
Zinc, French:	
Antwerp, Red Seal, dry.....	8 1/2 @ 8 1/4
Antwerp, Green Seal, dry.....	10 1/2 @ 10
Paris, Red Seal, dry.....	9 1/2 @ 9 1/4
Paris, Green Seal, dry.....	11 @ 10 1/2
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over.....	13 1/4 @ 13 1/2
Lots of less than 1 ton.....	13 1/2 @ 13 3/4
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over.....	11 1/2 @ 11 1/4
Lots of less than 1 ton.....	12 1/2 @ 12 1/4
Discounts—French Zinc—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1% 25 bbls., 2% 50 bbls., 4%.	
Dr. Colors—	
Black, Carbon.....	6 1/4 @ 7 1/2
Black Drop, American.....	3 1/2 @ 4
Black Drop, English.....	5 @ 5 1/2

Black, Ivory.....	16 @ 20
Lamp, Com.....	4 @ 6
Blue, Celestial.....	4 @ 6
Blue, Chinese.....	30 @ 33
Blue, Prussian.....	28 @ 32
Blue, Ultramarine.....	3 1/2 @ 15
Brown, Spanish.....	1 1/2 @ 1
Carmine, No. 40.....	3.10 @ 3.25
Green, Chrome, ordinary.....	3 1/4 @ 7
Green, Chrome, pure.....	17 @ 25
Lead, Red, bbls., 1/2 bbls., kegs.....	7 1/2 @ 7 3/4
Litharge, bbls., 1/2 bbls., kegs.....	7 1/2 @ 7 3/4
Ocher, American.....	1 ton \$8.50 @ 16 00
American Golden.....	2 1/2 @ 3 1/4
French.....	1 1/4 @ 2
Foreign Golden.....	3 @ 4
Orange Mineral, English.....	10 @ 12
French.....	11 1/2 @ 12
German.....	10 @ 12
American.....	8 1/2 @ 9
Red, Indian, English.....	4 1/2 @ 6
American.....	3 @ 3 1/4
Red, Turkey, English.....	7 @ 10
Red, Turcan, English.....	4 @ 10
Red, Venetian, Amer.....	100 lb. \$0.50 @ 1.25
English.....	100 lb. \$1.50 @ 1.60
Sienna, Italian, Burnt and	
Powdered.....	3 @ 9
Italian, Raw, Powdered.....	3 @ 7
American, Raw.....	1 1/2 @ 2
American Burnt and Pow'd.....	1 1/4 @ 2
Tale, French.....	1 ton \$18.00 @ 25.00
American.....	1 ton 15.00 @ 25.00
Terra Alba, French.....	100 lb. 90 @ 1.00
English.....	100 lb. 80 @ 1.00
American.....	100 lb. No. 1, 75 @ .80
American.....	100 lb. No. 2, 60 @ .65
Umber, Tkey, Bnt & Pow'd.....	2 @ 3 1/4
Turkey, Raw and Powdered.....	2 1/4 @ 3 1/2
Burnt, American.....	1 1/2 @ 2
Raw, American.....	1 1/2 @ 2
Yellow Chrome, Pure.....	12 @ 14
Vermilion, American Lead.....	7 @ 25
Quicksilver, bulk.....	65 @ 70
Quicksilver, bags.....	60 @ 66
English, Imported.....	6 @ 6 1/2
Chinese.....	\$0.90 @ 1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33% @ 33% & 10% signifies

that the price of the goods in question ranges from 33% per cent. discount to 33% and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1906, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Columbian and Domestic.....33%
North &.....10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition.—See Caps, Cartridges, Shells, &c.

Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, 1/2 doz. pairs, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Anvils—American—
Eagle Anvil.....@ 8%
Hay-Budden, Wrought.....@ 9%
Trenton.....@ 9%

Imported—

Peter Wright & Sons, 1/2 lb. 84 to 349 lb. 11¢; 350 to 600 lb. 11 1/2¢.

Anvil, Vise and Drill—

Millers Falls Co., \$18.00.....15%10%

Apple Parers—See Parers.

Apple, &c.

Aprons, Blacksmiths'—

Livingston Nail Co.....33%

Augers and Bits—

Com. Double Spur.....70¢10¢75%

Jennings' Patn., reg. finish.....60¢5¢60¢10%

Black Lip or Blued.....65¢65¢5%

Boring Mach. Augers.....70%

Car Bits, 12-in. twist.....40¢10%

Ford's Auger and Car Bits.....60¢5%

W. Washington Auger Co., Com. 35%

Forster Pat. Auger Bits.....25%

C. E. Jennings & Co., No. 10 ext. lip, R. Jennings' list, 25¢7%

No. 30, R. Jennings' list.....50%

Russell Jennings' list.....25¢10¢2%

L. Hommedieu Car Bits.....15%

Mayhew's Countersink Bits.....45%

Pugh's Black.....70%

Pugh's Jennings' Pattern.....35%

Snell's Auger Bits.....80%

Snell's Bell Hangers Bits.....60%

Snell's Car Bits, 12-in. twist.....60%

Snell's King Auger Bits.....50%

Wright's Jennings' Bits.....60%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's small, 1/8; large, 3/16.....60¢10%

Clark's Pattern, No. 1, 1/2 doz. 25¢

No. 2, 1/8.....60¢10%

Ford's, Clark's Pattern.....66¢5%

C. E. Jennings & Co., Steer's Pat. 25%

Lavigne Pat., small size, 1/8; large, 3/16.....60¢10%

Swan's.....60%

Gimlet Bits—

Common Dble. Cut.....\$3.00@3.25

German Pattern, Nos. 1 to 10, \$4.75; 11 to 13, \$5.75

Hollow Augers—

Bonney Pat., per doz. \$6.50@7.00

Ames.....25¢10%

Universal.....20%

Wood's Universal.....25%

Ship Augers and Bits—

Ship Augers.....40¢10%

Ford's.....33¢5%

C. E. Jennings & Co., L. Hommedieu's.....6%

Watrous's.....33¢7 1/2%

Snell's.....40%

Awl Hafts—See Handles, Mechanics' Tool.

Awls—

Brad Awls.....gro. \$2.75@3.00

Unhdd, Shldered.....gro. \$3.50@4.00

Unhdd, Patent.....gro. \$6.00@7.00

Pop Awls.....

Unhdd, Patent.....gro. \$1.50@1.75

Unhdd, Shldered.....gro. \$3.50@4.00

Scratch Awls.....

Handled, Com.....gro. \$3.50@4.00

Handled, Socket.....gro. \$11.50@12.00

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

Single Bit, base weights: Per doz.

First Quality.....\$4.75@5.00

Second Quality.....\$4.25@4.50

Double Bit, base weights:

First Quality.....\$7.00@7.50

Second Quality.....\$6.50@6.75

Axle Grease—

See Grease, Axle

Axles—

Concord, Loose Collar.....45¢5%

Concord, Solid Collar.....45¢5%

No. 1 Common, Loose.....35¢4%

No. 1 1/4 Com., New Style.....45¢4%

No. 2 Solid Collar.....35¢4%

Half Patent.....

Nos. 7, 8, 11 and 12.....70¢75%

Nos. 13 to 14.....70¢75%

Nos. 15 to 18.....75¢75¢5%

Nos. 19 to 22.....75¢75¢5%

Boxes, Axle—

Common and Concord, not turned lb., 45¢45¢

Common and Concord, turned lb., 51¢45¢

Half Patent.....lb., 95¢10¢

Bait—

Fishing—

Hendryx.....20%

A Bait.....20%

B Bait.....20%

Competitor Bait.....20%

Balances—

Sash—

Caldwell new list.....50%

Pullman.....50¢10¢60%

Spring—

Spring Balances.....50¢10¢60%

Chatillon's:

Light Spg. Balances.....50¢50¢10%

Straight Balances.....50¢50¢10%

Circular Balances.....50¢10%

Large Dial.....30%

Barb Wire—See Wire, Barb.

Bars—

Crow—

Steel Crowbars, 10 to 40 lb. per lb., 2 1/2¢@3¢

Towel—

No. 10 Ideal, Nickel Plate.....\$9.50

Beams, Scale—

Scale Beams.....40%

Chatillon's No. 1.....30%

Chatillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:

No. 12 Wire Coppered 1/2 doz. \$0.80;

Tinned.....\$0.85

No. 11 Wire Coppered 1/2 doz. \$1.15;

Tinned.....\$1.20

No. 10 Wire Tinned.....1/2 doz. \$1.50

Western W. G. Co.:

No. 1 Electric.....1/2 doz. \$7.80

No. 2 Buffalo.....1/2 doz. \$9.00

No. 3 Perfection Dust.....1/2 doz. \$8.00

Egg—

Holt-Lyon Co.:</

Hendryx Bronze; Series 700, 800, 30%
Hendryx Enamelled.....35%**Calipers—See Compasses.****Calks, Toe and Heel—**Blunt, 1 prong, per lb. 4 1/4 @ 4 1/2¢
Sharp, 1 prong, per lb. 4 1/4 @ 5 1/2¢
Blunt, 3/4 prong, per lb. 4 1/4 @ 4 1/2¢
Hautier, blunt, 4 1/4¢; Sharp, 4 1/4¢
Perkins, blunt, 1 lb. 3 1/2¢; Sharp, 4 1/2¢**Can Openers—**

See Opener, Can.

Cans, Milk—5 8 10 gal.
Illinois Pattern.....\$1.85 2.00 2.15
New York Pattern.....2.15 2.40 2.65
Dubuque.....1.85 2.00 2.15**Cans, Oil—**R. M. Co., Family, 1/2 gro.:
1 2 5
Empire.....\$21.00 \$33.00 \$56.00
Buffalo.....\$20.00**Caps, Percussion—**Eley's E. B.....\$8.00 @ 55¢
G. D.....per M \$1.40 @ 35¢
F. L.....per M \$1.40 @ 35¢
G. E.....per M \$1.40 @ 35¢
Musket.....per M \$2.00 @ 65¢**Primers—**Berdan Primers, \$2 per M.....20¢5
Primer Shells and Bullets.....15¢10
All other primers per M \$1.50 @ 1.60**Carpet Stretchers—**

See Stretchers, Carpet.

Cartridges—Blank Cartridges:
32 C. F., \$5.50.....10¢65
38 C. F., \$7.00.....10¢65
22 cal. Rim, \$1.50.....10¢65
32 cal. Rim, \$2.75.....10¢65
B. B. Caps, Con. Ball, Sieged, \$1.50
B. B. Caps, Round Ball.....\$1.40
Central Fire.....25¢
Target and Sporting Rifle.....15¢5
Trained Shells and Bullets.....15¢10
Rim Fire, Sporting.....50¢
Rim Fire, Military.....15¢5**Casters—**Bed.....65¢10
Plate.....60¢5
Philadelphia.....70¢10
Acme, Ball Bearing.....35¢
Boss.....70¢10
Boss Anti-Friction.....70¢10
Steel (Roller Bearing).....70¢10
Steel Gem.....45¢
Martin's Patent (Phoenix).....45¢
Standard Ball Bearing.....45¢
Tucker's Patent low list.....30¢
Yale (Double Wheel) low list.....40¢10**Cattle Leaders—**

See Leaders, Cattle.

Chain, Proof Coil—American Coil, Straight Link:
3-16 1/4 5-16 3/4 7-16 1/2 9-16
\$8.77 6.47 5.02 4.57 4.37 4.27 4.22
3/8 1/2 5/8 3/4 1 1 1/4 to 1 1/2 inch.
\$4.17 4.07 4.02 4.12
In cash lots, deduct 25¢.
German Coil.....60¢10 @ 10¢70**Halter—**Halter Chains.....60¢60 @ 5¢
German Pattern Halter Chains,
list July 24, '97.....60¢10 @ 5¢
Covert Mfg. Co.
Halter.....35¢5**Cow Ties—**

See Ties and Ties.

Trace, Wagon, &c.—Traces, Western Standard: 100 pr.
6 1/2-6 3/4, Straight, with ring, \$28.00
6 1/2-6 3/4, Straight, with ring, \$29.00
6 1/2-8 1/4, Straight, with ring, \$32.00
6 1/2-10 1/4, Straight, with ring, \$37.00
NOTE—Add 2c per pair for Hooks.
Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 4, 4c to price of Straight Link.
Eastern Standard Traces, Wag-
on Chain, &c.....60¢**Miscellaneous—**Jack Chain, list July 10, '93:
Iron.....60¢10
Brass.....50¢10
Safety and Plumbers' Chain,
60¢10
Gal. Pump Chain.....lb. 4 1/2 @ 1 1/4¢
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stal-
lion.....40¢
Oneida Community:
American Halter, Dog and Kennel
Chains.....35¢2 @ 40¢
Niagara Dog Leads and Kennel
Chains.....45¢60 @ 5¢
Wire Goods Co.:
Dog Chain.....70¢
Universal Dbl.-Jointed Chain.....50¢**Chain and Ribbon, Sash—**Oneida Community:
Steel Chain.....60¢
Pullman:
Bronze Chain, 60%; Steel Chain,
60% @ 10¢
Sash Chain Attachments, per set, 3¢
Aluminum Sash Ribbon, per 100
ft.....\$1.25 @ 33¢
Sash Ribbon Attachments, per set, 8¢
Chalk—(From Jobbers.)
Carpenters' Blue.....gro., 50¢ @ 55¢
Carpenters' Red.....gro., 45¢ @ 50¢
Carpenters' White.....gro., 40¢ @ 45¢
Checks, Door—
Bardley's.....45¢
Pullman, per gro.....\$5.00
Russwin.....35¢4**Chests, Tool—**American Tool Chest Co.:
Boys' Chests, with Tools.....50¢
Youths' Chests, with Tools.....50¢
Gentlemen's Chests, with Tools.....50¢
Farmers', Carpenters', etc., Chests,
with Tools.....25¢
Machinists' and Pipe Fitters'
Chests, Empty.....45¢
Tool Cabinets.....45¢
C. E. Jennings & Co.'s Machinists'
Tool Chests.....75¢**Chisels—**Socket Framing and Firmer
Standard List.....70¢10 @ 75¢
Buck Bros.....30¢
C. E. Jennings & Co.:
Socket Firmer No. 10.....25¢7 1/2
Socket Framing No. 15.....25¢7 1/2
Swan's.....66¢ @ 70¢
L. & J. White Co.....30¢30 @ 35¢**Tanged—**Tanged Firmers.....50¢ @ 55¢
Buck Bros.....30¢
C. E. Jennings & Co. Nos. 191, 185,
186.....25¢5
L. & J. White Co.....25¢5**Chucks—**Almond Drill Chucks.....35¢
Almond Turret Six-Tool Chuck.....40¢
Beach Pat., each \$8.00.....35¢5
Empire.....25¢
Blacksmiths'.....25¢
Jacob's Drill Chucks.....35¢
Pratt's Positive Drive.....25¢
Skinner Patent Chucks:
Independent Lathe Chucks.....35¢
Universal Reversible Jaws.....35¢
Combination, Reversible Jaws.....35¢
Drill Chucks, New Model, 25¢;
25¢; Positive Drive.....40¢
Planer Chucks.....20¢
Face Plate Jaws.....35¢
Standard Tool Co.:
Improved Drill Chuck.....45¢
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6,
7, 8 and 17, 40%; No. 21.....35¢
Scroll Combination, Nos. 83 and
84.....30¢
Geared Scroll, Nos. 33, 34 and 35.....30¢
Independent Iron, Nos. 18 and 318.....35¢
Independent Steel, Nos. 61.....25¢
Union Drill, Nos. 000, 00, 100, 101,
102, 103, 104.....35¢
Union Car Drill.....25¢
Universal, 11, 12, 16, 17, 13, 11, 15, 40%
Universal, No. 42.....35¢
Iron Face Plate Jaws, Nos. 28, 30,
38 and 50.....35¢
Steel Face Plate Jaws, Nos. 70 and
72.....30¢
Westcott Patent Chucks:
Lathe Chucks.....50¢
Little Giant Auxiliary Drill.....50¢
Little Giant Double Grip Drill.....50¢
Little Giant Drill, Improved.....50¢
Oneida Drill.....50¢
Scroll Combination Lathe.....50¢**Clamps—**Adjustable Hammers.....20¢20 @ 5¢
Carriage Makers', P. S. & W.
Co.....50¢10
Hosley, Parallel, 10 in. list.....50¢
Myers' Hay Rack.....35¢5
Lineman's Swedish Nevertum.....67¢
Wood Workers' Hammers.....40¢10
Saw Clamps, see Vises, Saw Filers'**Cleaners, Drain—**Iwan's Champion, Adjustable.....50¢
Iwan's Champion, Stationary.....40¢**Sidewalk—**Star Socket, All Steel, 1/2 doz. \$4.05 net
Star Shank, All Steel, 1/2 doz. \$3.24 net
W. & C. Shank, All Steel, 1/2 doz.,
7 1/4 in., \$3.00; 8 in., \$3.25**Cleavers, Butchers'—**Foster Bros.....30¢
Fayette R. Plumb.....30¢
L. & J. White Co.....30¢**Clippers, Horse and Sheep—**Chicago Flexible Shaft Company:
1902 Chicago Horse, each, \$10.75
20th Century Horse, each, \$5.00
Lightning Belt Horse, each, \$15.00
Chicago Belt Horse, each, \$20.00
Stewart's Enclosed Gear
Horse, each.....\$8.75
Stewart's Patent Sheep Shear-
ing Machine, each.....\$12.75
Stewart's Enclosed Gear Shear-
ing Machine, No. 8, each, \$9.75**Clips, Axle—**Regular Styles, list July 1, '05,
80¢ @ 80¢10**Cloth and Netting, Wire**

—See Wire, &c.

Cocks, Brass—Hardware list:
Plain Bibbs, Globe, Kerosene,
Racking, Liquor, Rotting,
&c.....60¢10 @ 65¢
Compression Bibbs.....55¢10 @ 60¢**Coffee Mills—**

See Mills, Coffee.

Collars, Dog—Nickel Chain, Walter B. Stevens &
Son's list.....40¢
Leather, Walter B. Stevens & Son's
list.....40¢**Combs, Curry—**

Metal Stamping Co.....40¢

Compasses, Dividers, &c.Ordinary Goods.....70¢10 @ 75¢
Wm. Schollhorn Co.:
Excelsior Dividers.....60¢
Lodi Dividers.....70¢10**Conductor Pipe—**L. C. L. to Dealers:
Galvanized Charcoal Copper.
Steel Iron. 1 1/2, 1 3/4, 2 oz.
Eastern:
70% 50¢17 1/2 30%
Central:
65¢10 55¢2 1/2 20¢10
Western and Southern:
65¢5 50¢7 1/2 20¢7 1/2
So. Western:
50¢25¢2 1/2 50% 20¢5
Terms, 60 days; 2% cash 10 days. Fac-
tory shipments generally delivered.
See also Eave Troughs.**Coolers, Water—**R. M. Co.,
Gal., ea. 2 3 4 6 8
Yukon.....\$1.25 \$1.50 \$2.00 \$2.25 \$2.75
Alaska.....\$2.25 \$2.50 \$3.00 \$4.00 \$5.00
L. & G. Mfg. Co.:
2 3 4 6 8
Galvanized ea. \$1.85 \$2.00 \$2.25 \$2.90 \$3.00
Galvanized, Lined, side handles,
Gal.....2 3 4 6 8
Each.....\$1.95 \$2.15 \$2.40 \$3.30 \$4.15
White Enamelled.....10¢
Agate Lined.....10¢**Coopers' Tools—**

See Tools, Coopers'.

Coopers' Soldering—Soldering Coppers, 3 lbs. to pair
and heavier, 32¢ @ 35¢; lighter
than 3 lb. to pair.....34¢ @ 37¢**Cord— Sash—**Braided, Drab.....lb. 35¢
Braided, White, Cam., Nos. 8
to 12, 26¢; No. 7, 26¢ @ 27¢; No. 6,
27¢ @ 28¢.
Cable Laid Italian, lb., No. 18, 37¢
Italian, lb., No. 18, 25¢; B, 22¢
Common India.....lb., 16¢ @ 17¢
Cotton Sash Cord, Twisted, 18¢ @ 20¢
Patent Russia.....lb., 20¢
Cable Laid Russia.....lb., 21¢
India Hemp, Br'd'd, lb., 21¢
India Hemp, Twisted, lb., 13¢ @ 14¢
Patent India, Twisted, lb., 17¢
Pearl Braided, cotton, No. 6, 1/2 lb.,
27¢ @ 28¢; No. 8 to 12, 26¢
Eddystone, Braided, Nos. 8 to 12,
26¢; 7, 26¢ @ 27¢; 6, 27¢ @ 28¢.
Harmony Cable Laid Italian, Nos. 7
to 10.....lb. 27¢
Fulman:
Wire Sash Cord.....10¢
Sash Cord Attachments, per doz. 10¢
Samson, Nos. 8 to 12:
Braided, 1/2 lb., Drab Cotton,
55¢; Italian Hemp, 40¢ @ 45¢
50¢; Lined, 55¢; White Cot-
ton, 50¢; Spot Cord.....50¢
Massachusetts, White.....lb. 40¢
Massachusetts, Drab.....lb. 45¢
Phoenix, White, Nos. 8 to 12, 27¢;
Silver Lake, per lb.:
A, Drab, 45¢; B, White, 40¢;
B, Drab, 40¢; C, White, 35¢;
Italian Hemp, 40¢; Lined, 57¢ @ 58¢
See also Chain and Ribbon.**Wire, Picture—**List July 10, 1906, \$5.50 @ \$5.50 @ 10¢
Hendryx Standard Wire Picture Cord,
No. 12 M'd m Knives, old list, \$5.00 @ 10¢
Turner & Stanton Co. Wire Picture
Cord.....\$5.00 @ 10¢
Cradles—
Grain.....40¢12 1/2 @ 13 1/2**Crays—**White Round Crays, Cases, 100
gro., \$6.50 @ \$7.50 at factory, but
lower prices made by jobbers
Zelnicker's Lumber.....\$7.50
White and Purple, Indelible.....\$7.50
Blue, Red, Green, Yellow and
Terra Cotta, \$6.50; Black.....\$4.00
Giant Lumber, 5 1/4 in. x 15-16 in.
round, all colors, \$16.25; Indel-
ible.....\$18.75
Genuine Soapstone, Metal Workers',
5 in. x 1 1/4 in. Round, \$2.50; 5 in. x
1 1/2 in. Square, \$1.75; 5 x 1 1/2 x 3-16,
\$2.50; 5 x 1 1/4 x 3-16.....\$3.00
Crooks, Shepherds'—
Fort Madison, per doz., Heavy, \$5.50;
Light.....\$5.00
Crow Bars—See Bars, Crow.**Cultivators—**

Victor Garden.....50¢

Cutlery, Table—International Silver Company:
No. 12 M'd m Knives, 1817, 1/2 doz. \$3.50
Star, Eagle, Rogers & Hamilton
and Anchor.....1/2 doz. \$3.00
Wm. Rogers & Son.....1/2 doz. \$2.50
Cutters— Glass—
H. H. Mayhew Co.....40¢
Red Devil.....60¢
B. Mfg. Co.....40¢
Woodward.....50¢**Meat and Food—**American:
Nos. 401 402 403 404 405 406 407
Each.....\$5 \$7 \$10 \$12 \$25 \$50 \$60
Enterprise:
Nos. 5 10 12 22 32
Each.....\$2 \$3 \$7 \$15 \$50 \$60 \$25 @ 25¢ @ 71¢ @ 71¢
No. 202 \$1.50.....40¢ @ 71¢
P. S. & W. Co.:
Dixon's.....1/2 doz. 33 1/4¢
Nos. 1 2 3 4
Ideal \$11.00 \$17.00 \$19.00 \$30.00
Hales.....40¢ @ 45¢
Little Giant.....1/2 doz. 40¢ @ 50¢
Nos. 305 310 312 320 322
\$35.00 \$48.00 \$14.00 \$72.00 \$68.00
New Triumph No. 605, 1/2 doz. \$24.00,
10¢ @ 10¢
Russwin Food, No. 1, \$24.00, No. 2,
\$27.00.....45¢ @ 10¢
Enterprise Beef Shavers.....25¢ @ 30¢**Slaw and Kraut—**Henry Diston & Sons:
Slaw and Kraut Cutters.....35¢
Corn Graters.....30¢
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife.....1/2 doz. \$3.00
Combined Slaw Cutter and Corn
Grater.....1/2 doz. \$4.00
Tucker & Horses Mfg. Co.:
Kraut Cutters.....35¢5
Slaw Cutters, 1 Knife, 1/2 gr. \$18.00 @ 24
Slaw Cutters, 2 Knife, 1/2 gr. \$24.00 @ 30**Tobacco—**All Iron, Cheap.....doz. \$4.25 @ \$1.50
Enterprise.....25¢ @ 30¢
National, 1/2 doz., No. 1, \$21; No. 2,
\$18.....40¢**Diggers, Post Hole, &c.—**Disston's:
Rapid, 1/2 doz., \$24.00.....25¢
Samson, 1/2 doz., \$34.00.....25¢
Iwan's Improved Post Hole Auger.....40¢
Vaughan Pattern Post Hole Augers,
1/2 doz., \$7.00
Perfection Post Hole Diggers, 1/2
doz., \$8.75
Split Handle Post Hole Diggers,
1/2 doz., \$7.75
Hercules Pattern, 1/2 doz., \$10.00
Kohler's, 1/2 doz., Universal, \$15.00;
Little Giant, \$12.00; Hercules,
\$10.00; Invincible, \$9.00; Rival,
\$8.50; Pioneer.....\$7.50
Never-Break Post Hole Diggers, 1/2
doz., \$24.00.....60¢**Dividers—See Compasses.****Drawers, Money—**Tucker's Pat. Alarm Tills, 1/2 doz.,
\$15.00 @ \$20.00**Drawing Knives—**

See Knives, Drawing.

Dressers, Emery Wheel—Sterling Emery Wheel Dressers.....35¢
Sterling Wheel Dresser Cutters.....35¢**Drills and Drill Stocks—**Blacksmiths' Common Drilling
Machines.....\$1.50 @ \$1.75
Brest, Millers Falls.....\$1.50
Brest, P. S. & W.....\$3.50
Goodell Automatic Drills, 50¢ @ 10¢
Millers Falls Automatic Drills, 50¢ @ 10¢
Hatchet, Curtis & Curtis.....25¢
Hatchet, Parker's.....40¢
Hatchet, Weston's.....40¢
Hatchet, Weston's, Style H Im-
proved.....40¢
Hatchet, No. 012.....40¢
Hatchet, Celebrated.....40¢
Hatchet, Whitney's, P. S. & W.
50¢5
Whitney's Hand Drill, No. 1, \$10.00;
Adjustable, No. 10, \$12.00.....35¢5**Twist Drills—**Bit Stock.....60¢10 @ 70¢
Taper and Straight Shank.....
60¢10 @ 60¢10 @ 5¢**Drivers, Screw—**Screw Driver Bits, per doz. 45¢ @ 50¢
Babcock's Screw Driver and Driver,
1/2 doz., 2 1/2 in., \$6; 4 in., \$7.50; 6 in.,
\$9
Buck Bros' Screw Driver Bits.....30¢
Champion.....70¢
Disston's.....70¢
Edison.....60¢
Fray's Hot H'd die Set, No. 3, \$12.50
Ford's Brace Screw Drivers.....40¢10
Gay's Double Action Ratchet.....35¢
Goodell's Auto.....65¢ @ 65¢10
Mayhew's Black Handle.....40¢
Mayhew's Monarch.....40¢
Millers Falls, Nos. 20 and 21, 25¢10
Millers Falls, Nos. 11, 12, 41, 42, 15¢10
New England Specialty Co., Never-
turn, 66¢; Elmora, 60¢; Star,
30¢10
H. D. Smith & Co.'s Perfect H'd die, 40¢
Swan's:
Nos. 7565 to 7568, 50%; No. 7540,
40¢10**Eave Trough, Galvanized—**Territory, L. C. L. Galvanized
Galv. Charcoal Copper.
Steel Iron. 1 1/2, 1 3/4, 2 oz.Eastern:
70¢30% 70% 30%
Central:
75¢10 @ 2 1/2 65¢10% 20¢10%
Western and Southern:
75¢7 1/2 65% 26¢7 1/2
So. Western:
75% 60¢10% 20¢5%
Terms—2% for cash. Factory ship
ments generally delivered.
See also Conductor Pipe and Elbows**Elbows and Shoes—**Factory ship vents, all territories:
Galv. Steel and Galv. C. I.
Standard Gauge.....80%
No. 26.....50%
No. 24.....50%
No. 22.....50%
Copper.....40¢10**Elbows, Stove Pipe—**Edwards, Standard Blue.....40¢10 @ 10¢
Edwards, Royal Blue.....40¢10 @ 10¢
Reeves, Dover, one piece.....40¢10
Republic, Perfect Elbows.....50¢**Emery, Turkish—**4 to 5 1/2 to
40: 250: Flour.
Kegs.....lb. 5¢ 5¢ 3 1/4¢
1 1/2 Kegs.....lb. 5 1/4¢ 5 1/4¢ 3 1/4¢
1/4 Kegs.....lb. 5 1/4¢ 6¢ 6¢
10-lb. cans,
10 in. cans.....6 1/4¢ 7¢ 8¢
10-lb. cans, less
than 10.....10¢ 10¢ 10¢
Less quantity, 10 1/2 10 1/2 8¢NOTE—In lots 1 to 3 tons a discount
of 10% is given.

Extractors, Lemon Juice—See *Squeezers, Lemon*.**Fasteners, Blind—**

Zimberman's.....50&10%

Upson's Patent.....40&10%

Cord and Weight—

Ives and Titian.....33&10%

Faucets—

Cork Lined.....50&10%

Metallic Key, Leather Lined.....40&10%

Red Cedar.....40&10%

Petroleum.....40&10%

Metal Key.....40&10%

Star.....40&10%

West Lock.....40&10%

John Sommer's Peerless Tin Key.....40&10%

John Sommer's Boss Tin Key.....40&10%

John Sommer's Victor Mil. Key.....40&10%

John Sommer's Duplex Metal Key.....40&10%

John Sommer's Diamond Lock.....40&10%

John Sommer's I. X. L. Cork Lined.....40&10%

John Sommer's Reliable Cork Lined.....40&10%

John Sommer's Chicago Cork Lined.....40&10%

John Sommer's O. K. Cork Lined.....40&10%

John Sommer's No Brand, Cedar.....40&10%

John Sommer's Perfection, Cedar.....40&10%

McKenna, Brass.....40&10%

Burglar Proof, Liquor.....40&10%

Improved, %.....40&10%

Enterprise, % doz.....40&10%

Lane's, % doz.....40&10%

National Measuring, % doz.....40&10%

Felloe Plates—See *Plates, Felloe*.**Files— Domestic—**

List Nov. 1, 1899.

Best Brands.....70&10%

Standard Brands.....70&10%

Lower Grade.....70&10%

Imported—

Stubbs' Tapers, Stubbs' List, July

25, '97.....33 1-3&10%

Fixtures, Fire Door—

Allith Underwriters' Approved.....50%

Richards Mfg. Co., 103; Special, No.

104.....33 1-3&10%

Fusible Links, No. 96.....50%

Expansion Bolts, No. 107.....60&10%

Grindstone—

Net Prices:

Inch.....15 17 19 21

Per doz.....\$3.60 3.85 4.15 4.65

P. S. & W. Co.....25%

Reading Hardware Co.....60%

Stowell's Giant Grindstone Hanger.....40%

Stowell's Grindstone Fixture, Extra

Heavy, 40&10%; Light.....50%

Fodder Squeezers—See *Compressors*.**Forks—**

NOTE.—Manufacturers are

selling from the list of September

1, 1904, but many jobbers are still

using list of August 1, 1899, or

selling at net prices.

Iowa Dig-Easy Potato.....60&10%

Victor, Hay.....40&10%

Victor, Maure.....60%

Victor, Header.....60%

Champion, Hay.....60%

Champion, Header.....60%

Champion, Maure.....60%

Columbia, Hay.....60%

Columbia, Header.....60%

Columbia, Spading.....60%

Hawkeye Wood Barley.....40%

W. & C. Potato Digger.....40%

Acme Hay.....60&10%

Acme Maure, 4 line.....60&10%

Acme Header.....60&10%

Jackson Steel Barley.....60&10%

Kansas Header.....60%

W. & C. Favorite Wood Barley.....40%

Plated.—See *Spoons*.**Frames— Wood Saw—**

White, 8'g't Bar, per doz.....75&80%

Red, 8'g't Bar, per doz.....\$1.00@1.15

Red, Dbl. Brace, per doz.....\$1.40@1.50

Freezers, Ice Cream—

Qt.1 2 3 4 6

Each.....\$1.25 \$1.60 \$1.90 \$2.20 \$2.80

Fruit and Jelly Presses—See *Presses, Fruit and Jelly*.**Fry Pans— See Pans, Fry.****Fuse— Per 1000 Feet.**

Hemp.....\$2.75

Cotton.....3.20

Waterproof Sgl. Taped.....3.65

Waterproof Dbl. Taped.....4.40

Waterproof Tpl. Taped.....5.15

Gates, Molasses and Oil—

Stebbins' Pattern.....75&80%

Gauges—

Marking, Mortise, &c.....50&50&10%

Chapin-Stephens Co.:.....50&50&10%

Marking, Mortise, &c.....50&50&10%

Dixon's Marking, Mortise, &c.....67%

Wire, Brown & Sharpe's.....33%

Wire, Morse's.....2%

Wire, P. S. & W. Co.....33%

Gimlets— Single Cut—

Numbered assort-

ments, per gro.

Nail, Metal, No. 1.....\$2.00, 2.....\$2.50

Nail, Metal, No. 1.....\$4.00, 2.....\$4.50

Nail, Wood Handled, No. 1.....\$2.50, 2.....\$2.80

Spike, Wood Handled, No. 1.....\$1.50, 2.....\$1.60

Glass, American WindowSee *Trade Report*.**Glasses, Level—**

Chapin-Stephens Co.....65&65&10%

Glue, Liquid Fish—

Bottles or Cans, with Brush.....25&10&50%

Elwell's.....40%

Grease, Axle—

Common Grade.....gro. \$3.00@6.50

Dixon's Everlasting, 10-lb. pails, ca.

80¢; in boxes, 1 doz., 1 lb. \$1.20;

2 lb.....\$2.00

Helmert Hard Oil.....25%

Griddles, Soapstone—

Pike Mfg. Co.....33%&33%&10%

Grinders—

Royal Mfg. Co.:.....

Alumund Grinding Machines, each,

Nos. 01, \$1.75; 1A, \$2.50; 19,

\$5.00.....30%

Alumund Sickle Grinders, each,

Nos. 20, \$5.00; 20A, \$6.00; 20A

Combined, \$6.50.....30%

Alumund Disc Grinders, each,

\$2.50.....30%

Grindstones—

Pike Mfg. Co.:.....

Improved Family Grindstones, 1/2

inch, 1/2 doz., \$2.00.....33%

Richards Mfg. Co., Eli and Cycle

Ball Bearing, mounted.....40%

Grips, Nipple—

Perfect Nipple Grips.....40&10&2%

Halters and Ties—

Cow Ties.....60&50&60&10%

Covert Mfg. Co.:.....

Web.....30&2%

Jute Rope.....35%

Sisal Rope.....35%

Cotton Rope.....45%

Hemp Rope.....45%

Oneida Community:

Am. Coll. and Halters.....40&40&5%

Am. Cow Ties.....45&60%

Niagara Coll. and Halters.....45&50&5%

Niagara Cow Ties.....45&50&10&5%

Hammers—

Handled Hammers—

Heller's Machinists'.....55&10&50&10&5%

Heller's Farriers'.....40&50&10&5%

Peck, Stow & Wilcox Co.:.....50%

Crucible Steel.....50%

Farriers'.....40&10&5%

Riveting.....50%

Machinists', revised list.....60&5%

Blacksmiths'.....50&5%

Fayette H. Humber:

A. E. Nail.....40&2%&40&12%

Eng. and B. S. Hand.....50&10&50&60&5%

Machinists' Hammers.....60&60&10%

Rivet and Timmers.....40&7%&40&12%&5%

Vaughan & Bushnell Mfg. Co.:.....

A. E. Nail.....40&2%&40&12%

Machinists'.....50&150&60&5%

Heavy Sledges—

Under 5 lb., per lb., 50¢, 80¢, 80¢, 5%

5 to 5 lb., per lb., 50¢, 80¢, 80¢, 5%

Over 5 lb., per lb., 80¢.....50%

Wilkinson's Smiths'.....lb. 9¢@10¢

Handles—

Agricultural Tool Handles

Aze, Pick, &c.....60&10@60&10&5%

Hoe, Rake, &c.....40&15&5%

Fork, Shovel, Spade, &c.:.....

Long Handles.....40&15&5%

D Handles.....40%

Cross-Cut Saw Handles—

Atkins.....40%

Champion.....50%

Livestock.....50%

Mechanics' Tool Handles—

Auger, assorted.....gro. \$3.00@4.50

Brad Axl.....gro. \$1.65@1.75

Chisel Handles, Ass'd, per gro.:.....

\$2.65; Hickory.....\$2.75@2.40

Socket Firming, Apple, \$1.75@1.95;

Hickory.....\$1.60@1.75

Socket Framing, Hickory.....\$1.60@1.75

File, assorted.....gro. \$1.30@1.40

Hammer, Hatchet, &c.....60&10@60&10&5%

Hand Saw, Varnished, doz.

80&85¢; Not Varnished.....45&75¢

Plane Handles:

Jack, doz. 50¢; Jack, Bolted, 75¢

Fore, doz. 45¢; Fore, Bolted, 90¢

Chapin-Stephens Co.:.....30&30&10%

Chisel.....60&60&10%

File and Awl.....60&60&10%

Saw and Plane.....30&30&10%

Screw Driver.....30&30&10%

Motters Falls Adj. and Ratchet Auger

Handles.....15&10%

Nicholson Simplicity File Handle.....

W. A. Zelnicker Supply Co.:.....\$2.00;

Hammer, 1/2 doz. 12 in., \$2.00; 18

in., \$2.50; 20 in., \$2.70; 22 in.,

\$3.00; 24 in., \$3.30; 26 in., \$3.50;

30 in., \$3.80.....

Sledge, 1/2 doz., oval, 30 in., \$3.80;

octagon, 30 in., \$3.80;

oval, 36 in., \$4.00; octagon,

36 in., \$4.00.....

Axe 1/2 doz., 28 to 34 in., \$5.60;

36 in., \$5.80.....

Adze, 1/2 doz., 36 in., \$5.80; 36

in., \$7.80.....

Pick, 1/2 doz., R. R., 36 in.,

\$8.00; coal, 34 in., \$5.80,

Hatchet, 1/2 doz., 12 to 14 in.,

\$2.00.....

Hangers—

NOTE.—Barn Door Hangers are generally

quoted per pair, without track,

and Parlor Door Hangers per double set

with track, &c.

Allith Mfg. Co.:.....

Reliable, Nos. 1 and 2; Allith, No.

3; Allith Adjustable, No. 6; Re-

liable Parlor Door.....50%

Chicago Spring Butt Co.:.....25%

Friction.....25%

Oscillating.....25%

Big Twin.....25%

Chisholm & Moore Mfg. Co.:.....50%

Baggage Car Door.....30%

Elevator.....30%

Railroad.....30%

Crink & Carrier Mfg. Co.:.....60&2%

Roller Bearing.....70&2%

Griffin Mfg. Co.:.....

Solid Axle, No. 10, \$12.00.....60&10%

Roller Bearing, No. 11, \$15.00.....60&10%

Roller Bearing, Ex. Hy. No.

22, \$18.00.....60&10%

Bull Dog, \$24.00.....70%

Lane Bros. Co.:.....

Parlor, Ball Bearing, \$1.00;

Standard, \$3.15; No. 105, \$2.85;

New Model, \$2.80; New Cham-

pion.....\$2.25

Barn Door, Standard.....60&10%

Hinged.....60&10%

Crown.....60&10%

Cyclone, No. 40.....net \$6.50

Tandem, No. 50.....net \$7.50

New York.....55&10%

McKinney Mfg. Co.:.....

Roller Bearing, Nos. 1 and 2.70

Anti-Friction.....60%

Hinged Hangers, King Charn.....60%

Meyers' Stayon Hangers.....60%

Richards Mfg. Co.:.....

Hangers, Nos. 47, 48, 147, 247,

60&5%

Pioneer Wood Track, No. 3, \$3.25;

Roller Brg. St. Track No. 12, \$2.25;

Roller Brg. St. Track No. 13, \$2.50;

Roller Brg. Nos. 39, 41, 43,

70&7%

Hero, Adj. Track No. 19,

Hoes—Eye—
Scorill and Oval Pattern—
 60¢10¢60¢10¢10¢
 Grub, list Feb. 23, 1899. 70¢10¢75¢10¢
 D. & H. Scorill. 30¢
 Am. Fork & Hoe Co. (Scorill Pat-
 tern) 60¢

Handled—
 NOTE.—Manufacturers are selling
 from the list of September 1, 1904, but
 many jobbers are still using list of Aug-
 ust 1, 1899, or selling at net prices.
 Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50
 Star Double Bit. 30¢
 F. T. Madison Cotton Hoe. 70¢10¢10¢
 F. T. Madison Crescent Cultivator Hoe.
 70¢10¢
 F. T. Madison Mattock Hoes:
 Regular Weight. 40¢ doz. 40¢5¢
 Junior Size. 40¢ doz. 40¢
 F. T. Madison Sprouting Hoe. 60¢10¢
 F. T. Madison Dixie Tobacco Hoe. 75¢10¢75¢
 Kretzinger's Cut Easy. 75¢10¢
 Warren Hoe. 75¢10¢
 B. B. C. Ivanhoe. 30¢
 B. B. C. Cultivator Hoe. 30¢
 B. B. C. 6 in. 30¢
 B. B. C. 6 in. 30¢
 W. & C. L. tining Shovel Hoe. 40¢ doz. 40¢5¢

Hoisting Apparatus—
 See Machines, Hoisting.

Holders—Bit—
 Angular, 40¢ doz. 40¢10¢

Door—
 Bardsley's, Iron, 40¢; Brass and
 Bronze 25¢
 Empire 25¢
 Pullman 25¢
 Richards Mfg. Co., No. 117, Ever-
 ready, 40¢; Nos. 118, 119, Sure
 Grip 50¢
 Superior 30¢

File and Tool—
 Nicholson File Holders and File
 Handles 30¢40¢

Fruit Jar—
 Triumph Fruit Jar Holder, 40¢ gross,
 \$10.80; 40¢ doz. 10¢25¢

Trace and Rein—
 Fernald Double Trace Holder, 40¢ doz.
 pairs 10¢25¢
 Dash Rein Holder, 40¢ doz. pairs. 10¢25¢

Hones—Razor—
 Pike Mfg. Co., Belgian and Swat,
 50¢; German 30¢

Hooks—Cast Iron—
 Bird Cage, Reading, 40¢
 Clothes Line, Reading, 40¢
 Clothes Line, Stowell's, 70¢
 Coat and Hat, Reading, 40¢5¢10¢
 Coat and Hat, Stowell's, 70¢
 Coat and Hat, Wrightsville, 60¢5¢
 Harness, Reading, 40¢
 Harness, Stowell's, 40¢
 School House, Stowell's, 70¢

Wire—
 Belt 80¢
 Wire C. & H. Hooks. 70¢70¢10¢
 Bradley Metal Clasp Wire, Coat and
 Hat, 70¢10¢; Ceiling, 70¢10¢
 Columbian Hdw. Co., Gem. 70¢5¢
 Parker Wire Goods Co., King, 70¢10¢
 Western W. & C. Molding, 75¢
 Wire Goods Co.:
 Acme, 60¢10¢; Chief, 70¢; Crown,
 75¢; Czar, 65¢; V. Brace, 75¢;
 Czar Harness, 50¢10¢

Wrought Iron—
 Boz, 6 in., per doz., \$1.00; 8 in.,
 \$1.25; 10 in., \$1.50.
 Cotton 40¢ doz. \$1.05@1.25
 Wrought Staples, Hooks, &c.—
 See Wrought Goods

Miscellaneous—
 Hooks, Bench, see Staps, Bench.
 Bush, Light, doz. \$6.20; Medium,
 75¢; Heavy, \$7.65
 Grass, best, all sizes, per doz. \$3.00
 Grass, common grades, all sizes,
 per doz. \$1.75
 Whiffletree 10¢5¢4¢
 Hooks and Eyes:
 Brass 60¢60¢10¢
 Malleable Iron 70¢70¢10¢
 Caves, Mfg. Co. Gate and Scuttle
 Hooks 40¢
 F. T. Madison Cut-Easy Corn Hooks,
 40¢ doz. 40¢5¢
 Turner & Stanton Co. Cup and
 Shoulder 80¢10¢
 Branch 10¢ doz. see Bench Staps.
 Corn Hooks—See Knives, Corn.

Horse Nails—
 See Nails, Horse.

Horseshoes—
 See Shoes, Horses.

Hose, Rubber—
 Garden Hose, 1/2-inch:
 Competition 5 ft. 5 @ 6¢
 3-ply Guaranteed, ft. 8 @ 9¢
 4-ply Guaranteed, ft. 10 @ 11¢
 Cotton Garden, 1/2-inch, coupled:
 Low Grade, ft. 8 @ 9¢
 Fair Quality, ft. 10 @ 11¢

Irons—Sad—
 From 1 to 10. 10¢10¢
 B. B. Sad Irons. 10¢10¢
 Mrs. Potts, cents per set:
 Nos. 50 55 60 65
 Jap'd Tops. 80 85 90 95
 Tin'd Tops. 88 85 98 95
 New England Pressing, lb. 5¢@1¢4¢

Bar and Corner—
 Richards Mfg. Co., Bar, 60¢10¢;
 Corner 60¢

Pinking—
 Pinking Irons. 40¢ doz. 40¢

Irons, Soldering
 See Solder.

Jacks, Wagon—
 Convent Mfg. Co.:
 Auto Screw. 30¢22¢; Steel, 45¢
 Lockport 50¢

Lane's Steel. 30¢5¢
 Richards' Tiger Steel, No. 130. 50¢10¢
 Smith & Hemenway Co.'s. 25¢

Ladder—
 Richards Mfg. Co., Ladder Jacks. 50¢

Kettles—
 Brass, Spun, Plain. 20¢25¢
 Enameled and Cast Iron—See Ware,
 Hollow.

Knives—
 Butcher, Kitchen, &c.—
 Foster Bros. Butcher, &c. 30¢
 Wilkinson Shear & Cutlery Co. 60¢

Corn—
 Columbian Cutlery Co., Wilcut
 Brand Knives and Hooks. 50¢
 Wilmington Acme. 40¢
 Dent, \$2.75; Adj. Serrated, \$2.20;
 Serrated, \$2.10; Yankee No. 1, \$1.50;
 Yankee No. 2, \$1.15.

Drawing—
 Standard List. 75¢5¢75¢10¢
 C. E. Jennings & Co., Nos. 45, 46,
 47, 48, 49, 50, 51, 52, 53, 54, 55, 56,
 57, 58, 59, 60, 61, 62, 63, 64, 65, 66,
 67, 68, 69, 70, 71, 72, 73, 74, 75, 76,
 77, 78, 79, 80, 81, 82, 83, 84, 85, 86,
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Hay and Straw—
 Serrated Edge, per doz. \$5.50@5.75
 Iwan's Sickle Edge. 40¢ doz. \$9.50
 Iwan's Serrated. 40¢ doz. \$10.00

Mining—
 Buffalo 40¢ doz. \$13.00

Miscellaneous—
 Farriers' 40¢ doz. \$3.00@3.25
 Wostenholm's 40¢ doz. \$3.00@3.25

Knobs—
 Base, 2 1/2-inch, Birch, or Maple,
 Rubber Tip. 40¢ doz. \$1.25@1.40
 Carriage, Jap., all sizes. 40¢ doz. \$1.25@1.40

Door, Mineral. 40¢ doz. \$1.25@1.40
Door, Por. Jap'd. 40¢ doz. \$1.25@1.40
Door, Por. Nickel. 40¢ doz. \$1.25@1.40
 Bardsley's Wood Door, Shutters, &c. 15¢

Lacing, Leather—
 See Belting, Leather.

Ladders, Store, &c.—
 Allith Mfg. Co., Reliable. 50¢
 Lane's Store. 25¢
 Myers' Noiseless Store Ladders. 45¢
 Richards Mfg. Co.:
 Improved Noiseless, No. 112. 50¢
 Climax Shelf, No. 113. 50¢
 Trolley, No. 109. 50¢

Ladies, Melting—
 L. & G. Mfg. Co. (low list). 20¢
 P. S. & W. 40¢10¢
 Reading 60¢

Lanterns—Tubular—
 Regular, No. 0. 40¢ doz. \$1.35@1.50
 Side Lift, No. 0. 40¢ doz. \$1.60@1.75
 Hinge Globe, No. 0. 40¢ doz. \$1.60@1.75
 Other Styles. 40¢ doz. \$1.60@1.75

Bull's Eye Police—
 3-inch. 40¢ doz. \$1.25@1.40

Lasts and Stands, Shoe—
 Stowell's Atlas, Malleable Iron. 50¢
 Stowell's Badger, Cast Iron. 50¢

Latches—Thumb—
 Roggin's Latches, with screw. 40¢ doz. \$1.25@1.40

Door—
 Allith Mfg. Co., Reliable and Allegator,
 50¢; Reliable Cold Storage, 50¢
 Cronk & Carrier Mfg. Co., No. 101,
 40¢ doz. \$2.20
 Richards' Bull Dog, Heavy, No. 125,
 50¢5¢
 Richards' Trump, No. 127. 50¢5¢
 Stowell's Steel. 50¢

Leaders, Cattle—
 Small. 40¢ doz. 50¢; large, 80¢
 Covert Mfg. Co.:
 Cotton, 45¢; Hemp, 45¢; Jute, 35¢;
 Sisal, 20¢

Leathers, Pump—
 See Pumps.

Lifters, Transom—
 R. & E. 10¢

Lines—
 Wire Clothes, Nos. 18 19 20
 10¢ doz. \$2.50 2.25 2.00
 75¢ doz. 1.75 1.55 1.10

Lumson Cordage Works—
 Solid Braided Chalk, Nos. 0 to 3. 40¢
 Solid Braided Masons' Chalk, No. 0,
 \$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3,
 \$7.50.
 Masons' Lines, Shade Cord, &c.:
 White Cotton, No. 3 1/2, \$1.50; No. 4,
 \$2.00; No. 4 1/2, \$2.50; Colors, No. 3 1/2,
 \$1.75; No. 4, \$2.25; No. 4 1/2, \$2.75;
 Linen, No. 3 1/2, \$2.50; No. 4, \$3.50;
 No. 4 1/2, \$4.50.
 Tent and Awning Lines: No. 5,
 \$5.00; White Cotton, \$7.50; Drab Cotton,
 \$8.50.
 Clothes Lines, White Cotton: 50 ft.,
 \$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75
 ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75;
 100 ft., \$5.25.
 Turner & Stanton Co.:
 Solid Braided Chalk, Masons' and
 Awning Lines. 40¢
 Clothes Lines, White Cotton. 20¢
 Shade Cord, Cotton or Linen. 20¢

Locks—Cabinet—
 Cabinet Locks. 20¢1¢

Door Locks, Latches, &c.—
 NOTE.—Net Prices are very often made
 on these goods.

Elevator—
 Reading Hardware Co. 40¢
 R. & E. Mfg. Co. 10¢
 Stowell's. 50¢

Padlocks—
 R. & E. Mfg. Co. Wrought Steel and
 Brass. 75¢10¢

Sash, &c.—
 Ives' Patent:
 Bronze and Brass, 55¢5¢; Crescent,
 60¢; Iron, 60¢; Window Ventilating,
 40¢20¢; Robinson Pat. Ventilating
 Sash Lock, 33¢4¢.

Pullman Patent Ventilating Lock. 35¢
 Reading 40¢

Machines—Boring—
 Com. Up'r, without Augers. 20¢20¢
 Com. Ang'l'r, without Augers. 20¢20¢

Swan's Improved. 20¢20¢2.50
Jennings, Nos. 1 and 4. 10¢10¢
Miller's Falls. 5.75
Snell's, Upright, \$2.65; Angular, \$2.90

Corking—
 Reisinger Invincible Hand Power. 40¢ doz. \$18.00

Fence—
 Williams' Fence Machines. each, \$5.50

Hoisting—
 Moore's Anti-Friction Chain Hoist. 30¢
 Moore's Hand Hoist, with Lock. 20¢
 Moore's Cyclon. High Speed Chain
 Hoist. 25¢

Ice Cutting—
 Chandler's 12¢4¢

Washing
 Boss Washing Machine Co.: Per doz.
 Boss No. 1. 45¢10¢
 Boss Rotary. 45¢10¢
 Champion Rotary Banner No. 1. 45¢10¢
 Standard Champion No. 1. 45¢10¢
 Standard Perfection. 45¢10¢
 Cincinnati Square Western. 45¢10¢
 Uneda American, Round. 45¢10¢

Mallets—
 Hickory. 45¢5¢50¢
 Lignumvita. 45¢5¢50¢
 Tinners' Hickory and Apple
 Wood. 45¢5¢50¢

Mangers, Stable—
 Swett Iron Works. 50¢

Mashers, Vegetable—
 Western, W. G. Co., Potato. 60¢10¢

Pinking Irons— See Irons, Pinking.

Vaughan & Bushnell Mfg. Co.:
Blacksmiths' per doz., 10 in.,
\$5.00; 12 in., \$5.50; 14 in., \$6.00.
Carpenters' Claw per doz., 6 in.,
\$1.25; 8 in., \$2.75; 10 in., \$3.50.

Pins, Escutcheon—

Brass, 50¢ @ 50¢ & 10¢
Iron, list Nov. 11, '05, 60¢ @ 60¢ & 10¢

Pipe, Cast Iron Soil—

Standard, 2-6 in., 50¢
Extra Heavy, 2-6 in., 60¢
Fittings, Stand. and Hvy., 70¢

Pipe, Merchant—

Consumers, Carload.
Steel. Iron. Galv.
Blk. Galv. Blk. Galv.
1/4 & 1/2 in., 63¢ 57¢ 41¢
3/4 in., 66¢ 52¢ 39¢
1 in., 68¢ 56¢ 41¢
1 1/2 to 6 in., 72¢ 66¢ 56¢
7 to 12 in., 69¢ 61¢ 46¢

Pipe, Vitrified Sewer—

Carload lots.
Standard Pipe and Fittings, 3
to 24 in., f.o.b. factory:
First-class, 82¢
Second-class, 85¢
NOTE.—Market irregular.

Pipe, Stove—

Per 100 joints.
Edwards' Nested: C. L. L. C. L.
5 in., Standard Blue, \$6.25 7.25
6 in., Standard Blue, 6.75 7.75
7 in., Standard Blue, 7.15 8.15
5 in., Royal Blue, 7.00 8.00
6 in., Royal Blue, 7.50 8.50
7 in., Royal Blue, 8.50 9.50
Wheeler Corrugating Co.'s Nested:
5 in., Uniform Color, \$6.15 7.15
6 in., Uniform Color, 6.65 7.65
7 in., Uniform Color, 7.65 8.65

Planes and Plane Irons—

Wood Planes—
Bench, first qual., 30¢ @ 30¢ & 10¢
Bench, second qual., 40¢ @ 40¢ & 10¢
Molding, 25¢ @ 25¢ & 10¢
Chapin-Stephens Co.:
Bench, First Quality, 30¢
Bench, Second Quality, 40¢
Molding and Miscellaneous, 25¢
Toy and German, 30¢
Union, 60¢
Iron Planes—
Chapin's Iron Planes, 50¢ & 10¢
Union, 60¢
Plane Irons—
Wood Bench Plane Irons, list
Dec. 12, '06, 25¢
Buck Bros., 30¢
Chapin-Stephens Co., 25¢
L. & J. J. White, 50¢
Kohler's Eclipse, per doz., \$8.00

Planters, Corn, Hand—

Felloe, 10¢ @ 10¢ & 10¢
Self-Sealing Pie Plates (B. M.
Co.), per doz., \$2.00, 50¢

Plates—

Butt Pliers, 75¢ @ 75¢ & 10¢
Gas Burner, per doz., 5 in., \$1.25
@ \$1.30; 7 in., \$1.45 @ \$1.50.
Gas Pipe, 7 in., 8 in., 12 in.,
\$2.00, \$2.25, \$2.75, 50¢ & 10¢
Acme Nippers, 50¢ & 10¢
Cronk & Carrier Mfg. Co.:
American Button, 30¢
Improved Button, 75¢ @ 75¢ & 10¢
Cronk's, No. 80 Linemen's, 50¢
Stub's Pattern, 45¢
Combination and others, 35¢
Heller's Farriers' Nippers, Pincers
and Tools, 40¢ @ 40¢ & 10¢
The Nettleton Mfg. Co. Reversible
Cutting Nippers, 40¢
P. S. & W. Timmers' Cutting Nip-
pers, 60¢
Wm. Schollhorn Co.:
Bernard, 35%; Elm City, 35%;
Paragon, 50%; Lodi, 55%
Swedish Side, End and Diagonal Cut-
ting Pliers, 50¢
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds, 40¢
Vaughan & Bushnell Mfg. Co.:
Gas Burner, per doz., 5 in., \$2.50;
6 in., \$3.00.
Gas, per doz., 7 in., \$3.50; 8 in.,
\$3.75; 10 in., \$4.50.
Nippers, Horsehoofers' Cutting, 40¢
Hoof Paring, 40¢

Pliers and Nippers -

Plumbers and Levels—
Chapin-Stephens Co.:
Plumbers and Levels, 30¢ @ 30¢ & 10¢
Chapin's Imp. Brass Cor., 40¢ @ 40¢ & 10¢
Pocket Levels, 30¢ @ 30¢ & 10¢
Extension Sights, 30¢ @ 30¢ & 10¢
Machinists' Levels, 40¢ @ 40¢ & 10¢
Diston's Plumbers and Levels, 60¢ & 10¢
Diston's Pocket Levels, 60¢ & 10¢
Stanley's Duplex, 30¢
Woods' Extension, 35¢
Poachers, Egg—
Buffalo Steam Egg Poachers, 1, \$5.00;
2, \$6.00; 600, \$13.00, 40¢
Points, Glaziers'—
Bulk and 1-lb. papers, 10¢ @ 10¢ & 10¢
1/4-lb. papers, 10¢ @ 10¢ & 10¢
1/2-lb. papers, 10¢ @ 10¢ & 10¢
Police Goods—
Manufacturers' Lists, 50¢ @ 50¢ & 10¢
Towers', 25¢
Polish—Metal, Etc.
Glassite, No. 2, 5 lb. can (powder),
each, \$1.25; per doz., \$12.00; No. 2, 10 lb.
can (cake), each, \$2.50; per doz., \$24.00.

Prestoline Liquid, No. 1 (1/2 pt.),
doz., \$3.00; No. 2 (1 qt.), \$2.00, 40¢
Prestoline Paste, 50¢
George William Hoffman:
U. S. Metal Polish Paste, 3 oz.
boxes, per doz., 50¢; per gro., \$4.50.
1/2 lb boxes, per doz., \$1.25; 1 lb
boxes, per doz., \$2.25.
U. S. Liquid, 8 oz. cans, per doz.,
\$1.25.
Barkeepers' Friend Metal Polish, per
doz., \$1.75.

Stove—

Black Eagle Benzine Paste, 5 lb cans,
per doz., \$1.10
Black Eagle, Liquid, 1/2 pt. cans,
per doz., 75¢
Black Jack Paste, 1/2 lb cans, per doz., \$9.00
Black Kid Paste, 5 lb cans, each, \$6.65
Ladd's Black Beauty Liquid, per
100 tins, \$7.75
Joseph Dixon's, per gr., \$7.75
Dixon's Plumbago, per lb, 8¢
Firestone, per gr., \$2.50
Gem, per gr., \$4.50
Japanese, per gr., \$3.50
Jet Black, per gr., \$5.50
Peerless Iron Enamel, 10 oz cans,
per doz., \$1.50

Poppers, Corn—

1 qt. Square, doz., \$0.88; gro., \$8.75
1 qt. Round, doz., \$1.00; gro., \$10.00
1 1/2 qt. Square, doz., \$1.10; gro., \$11.00
2 qt. Square, doz., \$1.35; gro., \$13.50

Post Hole and Tree Au- gers and Diggers—

See also Diggers, Post Hole, &c.

Posts, Steel—

Steel Fence Posts, each, 5 ft., 4¢;
6 ft., 4¢; 6 1/2 ft., 4¢
Steel Hitching Posts, each, \$1.30

Potato Parers—

See Parers, Potato.

Pots, Glue—

Enamelled, 35¢ @ 30¢ & 10¢
Tinned, 50¢ @ 10¢

Powder—

In Canisters:
Duck, 1 lb., each, 45¢
Fine Sporting, 1 lb., each, 75¢
Rifle, 1/2 lb., each, 15¢
Rifle, 1 lb., each, 25¢
In Kegs:
12 1/2 lb. kegs, \$3.50
25 lb. kegs, \$4.50
King's Semi-Smokeless:
Keg (25 lb bulk), \$6.50
Half keg (12 1/2 lb bulk), \$3.50
Quarter keg (6 1/4 lb bulk), \$1.90
Case 24 (1 lb cans bulk), \$8.50
Half case (1 lb cans bulk), \$4.50
King's Smokeless: Shot Gun. Rifle.
Keg (25 lb bulk), \$12.00 15.00
Half keg (12 1/2 lb bulk), \$6.00 7.50
Quarter keg (6 1/4 lb bulk), 3.25 4.00
Case 24 (1 lb cans bulk), 14.00 17.00
Half case 12 (1 lb c. bk.), 7.25 8.75
Robin Hood Sm'less Shot Gun, 50¢ & 10¢

Presses—

Fruit and Jelly —
Enterprise Mfg. Co., 20¢ @ 25¢
Seal Presses—
Morrill's No. 1, per doz., \$20.00, 50¢
Pruning Hooks and Shears
See Shears.

Pullers, Nail—

Cyclops, 50¢
Miller's Falls, No. 3, per doz., \$12.00,
35¢ @ 10¢
Morrill's No. 1, Nail Puller, per doz.,
\$20.00, 50¢
Pearson No. 1, Cyclone Spike Puller,
each \$30.00, 50¢
The Scranton Co. Case Lots:
No. 2H (large), \$5.50
No. 3B (small), \$5.00
Smith & Hemenway Co.:
Diamond B., 70¢
Giant, 50¢
Staple Pullers, Utica and Davi-
son, 60¢
Parrot Track and Stub Puller, per doz.,
75¢; per gro., \$6.00

Pulleys, Single Wheel—

Inch, 1/4 1/2 3/4 1 1 1/2 2 3
Aving or Tackle, 1/4 1/2 3/4 1 1 1/2 2 3
doz., \$0.30 45 60 1.05
Hay Fork, Swivel or Solid Eye,
doz., 1/4 in., \$1.25; 5 in., \$1.55
Inch, 1/4 1/2 3/4 1 1 1/2 2 3
Hot House, doz., \$0.65 85 1.80
Inch, 1/4 1/2 3/4 1 1 1/2 2 3
Screw, doz., \$0.16 19 23 30
Inch, 1/4 1/2 3/4 1 1 1/2 2 3
Side, doz., \$0.25 40 55 60
Inch, 1/4 1/2 3/4 1 1 1/2 2 3
Stowell's:
Ceiling or End, Anti-Friction, 60¢ & 10¢
Dumb Waiter, Anti-Friction, 60¢ & 10¢
Electric Light, 60¢
Side, Anti-Friction, 60¢ & 10¢

Sash Pulleys—

Common Frame: Square or
Round End, per doz, 1 1/2 and
2 in., 17¢ @ 20¢
Auger Mortise, no Face Plate
per doz., 1 1/2 and 2 in., 20¢ @ 21¢
Acme, No. 35, 1 1/2 in., 19¢; 2 in., 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.,
per doz., 50¢
Grand Rapids All Steel Noiseless, 50¢
Ideal, Nos. 25, 1 1/2 in., 19¢; 2
in., 20¢
No. 26, Trov, 1 1/2 in., 14¢; 2 in., 16¢
Star, No. 26, 1 1/2 in., 19¢; 2 in., 20¢
Tackle Blocks—See Blocks.

Pumps—

Cistern, 60¢
Pitcher Spout, 75¢ @ 75¢ & 10¢
Wood Pumps, Tubing, &c., 45¢ @ 50¢
Barnes Dbl. Acting (low list), 40¢ & 5¢
Barnes Pitcher Spout, 75¢ & 5¢
Contractors' Rubber Diaphragm No.,
3 B. & L. Rubber Co., \$16.00
Daisy Spray Pump, per doz., \$6.50

Flint & Walling's, Fast Mail Hand,
(low list), 50¢
Flint & Walling's Fast Mail (low
list), 50¢
Flint & Walling's Tight Top Pitcher,
75¢ @ 10¢

National Specialty Mfg. Co., Measur-
ing, Nos. 2, \$6.00; 3, \$5.50, 30¢
Myers' Pumps (low list), 45¢
Myers' Power Pumps, 45¢
Myers' Spray Pumps, 45¢

Pump Leathers—

Plunger and Lower Valve—Per
gro.:
Inch, 2 2 1/2 3 3 1/2 4
\$2.20 2.50 2.75 3.00
Inch, 3 3 1/2 3 3 1/2 4
\$3.50 3.60 3.85 4.10 4.40
Plunger Cup Leathers—Per 100:
Inch, 2 1/2 3 3 1/2 4
\$2.75 3.85 5.00 6.00

Punches—

Saddlers' or Drive, good, 50¢ @ 75¢
Spring, single tube, good qual-
ity, 17¢ @ 17¢ & 20¢
Revolving (1/4 tubes), doz., \$1.50 @ 3.75

Bemis & Call Co.'s Cast St'l Drive, 50¢
Morrill's Nos. 1AA, 1A, 1B, 1C,
1D, \$15.00, 50¢
Hercules, 1 die, each \$5.00, 50¢
Niagara Hollow Punches, 40¢
Niagara Solid Punches, 55¢ @ 10¢
Wm. Schollhorn Co.:
Belt and Ticket, Bernard, 35%;
Paragon, 50%; Lodi, 55%;
Timmers' Hollow, P. S. & W. Co., 40%;
Timmers' Solid, P. S. & W. Co., 40%;
doz., \$1.44, 40%

Rail—Barn Door, &c.—

Sliding Door, Painted Iron, 2 1/2 @ 2 1/2¢

Sliding Door, Wrought Brass,
1 1/2 in., 1 lb., 36¢, 30¢
Allith Mfg. Co.: Reliable Hanger
Track, 1 1/2 in., 50¢
Cronk's:
Double Braced Steel Rail, per ft., 3 1/4¢
O. N. T. Rail, \$3.12
Griffin's:
xxx, per 100 ft., 1 x 3-16 in., \$3.25;
1 1/2 x 3-16 in., \$3.75.
Hinger Hanger, per 100 ft., 1 x 3-16
in., \$3.50; 1 1/2 x 3-16 in., \$4.00.
Lane's:
Hinged Track, per 100 ft., \$3.45
O. N. T., per 100 ft., 1 in., \$3.00; 1 1/2
in., \$3.45; 1 1/2 in., \$4.00.
Standard, 1 1/2 in., \$3.00
Lawrence Bros., per 100 ft., \$7.50; 1 1/2 x
3-16 in., \$8.75, 55¢ & 7 1/2¢
McKinney's:
Hinged Hanger Track, per ft., 11¢,
65¢ & 7 1/2¢
1 x 3-16 Track, 55¢ & 7 1/2¢
Myers' Stayon Track, 60¢ & 5¢
Richards' Mfg. Co.:
Common, 1 x 3-6 in., \$3.00; 1 1/2 x
3-16, \$3.25; 1 1/2 x 3-16, \$3.50.
Special Hinged Hanger Rail, 60¢ & 10¢
Lag Screw Rail, No. 65, 70¢ & 10¢
Gauge Trolley Track, per ft., No. 31,
9¢; No. 32, 14¢; No. 33, 20¢
No. 50, 60¢ & 10¢
Nos. 61, \$3.00; 62, \$3.25; 63, \$3.50; 64,
\$4.00; 65, \$3.25; 66, \$3.50; 67, \$4.00, 1,
\$3.25; 2, \$3.50.
Stowell's:
Cast Rail, Plain, per ft., 2 1/4¢
Steel Rail, Plain, 25¢
Wrought Bracket, 1 x 3-16 in.,
per ft., 3 1/2¢
Wrought Bracket, 1 1/2 x 5-16, per ft., 1¢
Sweet's Hinge Hanger, 60¢
P. L. B. Steel Rail, per 100 ft., \$3.12
No. 0, 1 x 3-16, per 100 ft., \$3.12

Ropes—

NOTE.—Many goods are sold
at net prices.
Fort Madison Red Head Lawn, \$3.25
Fort Madison Blue Head Lawn, \$2.70
Cronk's:
Steel Garden: Champion, 75%;
Ideal, 80%; Victor, 80¢ & 25¢
Queen City Lawn, per doz., 20 tins, 10¢
Anticlog Lawn, per doz., \$4.00
Hellenble Garden, 80¢
Ideal Steel Garden, per doz., 12 teeth,
\$15.00; 11, \$16.00; 16, \$18.00, 50¢
Kohler's:
Lawn Queen, 20-tooth, per doz., \$3.15
Lawn Queen, 24-tooth, per doz., \$3.25
Paragon, 20-tooth, per doz., \$2.70
Paragon, 24-tooth, per doz., \$2.75
Steel Garden, 14-tooth, per doz., \$2.40
Malleable Garden, 14-tooth, per doz.,
\$2.00 @ 2.25

Razors—

Liana Bo-ras-ic, 60¢
Fox Razors, per doz., No. 42, \$2.00;
No. 44, \$3.00; No. 52, Platina, } 50¢
\$2.50
Red Devil, 65¢
Silberstein:
Carbo Magnetic, \$20.00; Griffon No.
65, \$15.00; Griffon, No. 60, \$12.00;
all other Razors, 40¢
Safety Razors—
Kampfe Bros.:
Star Safety, 25%; Star Interchange-
able, 25%; Star Safety Razor, 25%;
Silberstein, 40%
Reels, Fishing—
Hendryx:
M & G A, B, C, M, 9 1/4, M 16,
Q 16, A 16, B 16, 4000, Rubber,
Populo, Nickeled Populo, 20%
Aluminum German Silv., Bronze, 25%
1240 N, 124 N, 124 N, 20%
300 N, 300 N, 6 RM, G 9, 25%
4 N, 6 PN, 24 N, 26 PN, 20%

2904 P, 33 1/4%; 2904 PN, 33 1/4%; 0924 N,
33 1/4%; 02084 N, 33 1/4%; 002904 PN,
33 1/4%; 802 N, 33 1/4%;
986 PN, 2904 N, 974 PN, 25%
5009 PN, 5009 N, 20%
Competitor, 102 P, 102 PN, 202 P,
202 PN, 102 PR, 202 PR, 20%
304 P, 304 PN, 00304 P, 00304 PN, 33 1/4%
Registers—List July 1, 1903.

Japanned, Electroplated and
Bronzed, 66¢ @ 7¢
White Porcelain Enamel, 60¢
Solid Brass or Bronze Metal,
40¢ @ 10%

Revolvers—

Single Action, 95¢ @ \$1.00
Double Action, except 44 cal., \$1.80
Double Action, 44 caliber, 2.00
Automatic, \$4.00
Hammerless, \$4.50

Riddles, Hardware Grade

16 in., per doz., \$2.50 @ \$2.75
17 in., per doz., \$2.75 @ \$3.00
18 in., per doz., \$3.00 @ \$3.25

Rings and Ringers—

Bull Rings—
Steel, 0.70 0.75 0.80 doz.
Copper, \$1.30 1.50 1.90 doz.
Rea's Improved Self-Piercing, per doz.,
Copper, 2 in., \$1.25; 2 1/2 in., \$1.50;
3 in., \$1.75.

Hog Rings and Ringers—

Hill's Rings, gro. boxes, \$1.00 @ \$1.50
Hill's Ringers, Gray Iron, 50¢ @ 55¢
Hill's Ringers, Malleable Iron, 70¢ @ 75¢

Blair's Rings—

Blair's Rings, per gro., \$1.75 @ \$2.25
Blair's Ringers, per doz., \$0.60 @ .65
Brown's Rings, per gro., \$5.00 @ \$5.50
Brown's Ringers, per doz., \$0.60 @ .65

Rivets and Burrs—

Copper, 33 1/4 @ 35%
Carriage, Coopers', Timmers', &c.,
Black, 70¢ @ 10¢
Metallic Tinned, 70%

Bifurcated and Tubular—

Assorted in Boxes.
Bifurcated, per doz. boxes, paste-
board boxes, 25¢ @ 25¢; Tin boxes,
29¢ @ 32¢.

Tubular, per doz. boxes, 50 count,

72¢; 100 count, 61¢ @ 68¢.

Rollers—

Acme, Stowell's Anti-Friction, 50%
Cronk's Stay, No. 50, \$1.00
Cronk's Brinkerhoff No. 55, \$0.60
No. 56, \$0.75; No. 60, \$0.75
Lane's Stay, 40%
Richards' Stay:
Handy Adj. and Reversible No. 53, 75¢
O. K. Adj. and Reversible No. 58, 50¢
Lag Screw, Nos. 55 and 57, 50¢
Underwriter's, Nos. 58, 60, 50¢
Favorite, No. 54, 60¢
Stowell's Barn Door Stay, per doz., \$1.00
Sweet's Acme, 50%
Screw and Spike Stay, per doz., 65¢
Hinge Adjustable Stay, per doz., 80¢

Rope—

Manila, 7-16 in. diam. and larger:
Pure, 13¢ @ 13 1/2¢
Sisal, 7-16 in. diam. and larger:
Pure, 10¢ @ 10 1/2¢
Sisal, 7-16 in. diam. and larger:
No. 2 quality, 10¢ @ 10 1/2¢
Sisal, 1/4 in. and larger, 10¢ @ 10 1/2¢
Ropes, Medium and Coarse:
Mixed, 10¢ @ 10 1/2¢
Pure, 10¢ @ 10 1/2¢
Sisal, Tarred, Medium Lath
Yarn, Coarse and Untarred:
Mixed, 10¢ @ 10 1/2¢
Pure, 10¢ @ 10 1/2¢
Cotton Rope:
Best, 1/4-in. and larger, 18¢ @ 20¢
Medium, 1/4-in. and larger, 16¢ @ 17¢
Common, 1/4-in. and larger, 10¢
In coils, 1/2 advance.

Jute Rope—

Thread, No. 1, 1/4-in. & up, 10¢ @ 10 1/2¢
Thread, No. 2, 1/4-in. & up, 10¢ @ 10 1/2¢

Wire Rope—

Galvanized, 37¢ @ 37 1/2¢
Plain, 35¢ @ 35 1/2¢

Ropes, Hammock—

Cort Mfg. Co.:
Jute, 35%; Sisal, 20%

Rules

Boxwood, 60¢ @ 60¢ & 10¢
Ivory, 35¢ @ 35¢ & 10¢
Chapin-Stephens Co.:
Boxwood, 60%
Flexfold, 60%
Ivory, 25¢ @ 25¢ & 10¢
Miscellaneous, 50¢ @ 50¢ & 10¢
Stephens' Combination, 55%
Stationers', 50¢ @ 50¢ & 10¢

Keuffel & Esser Co.: Folding, Wood, 35¢ @ 35¢ & 10¢ Folding, Steel, 35¢ @ 35¢ & 10¢ Lufkin's Steel, 35¢ @ 35¢ & 10¢ Lufkin's Lumber, 50¢ @ 50¢ & 10¢ Unson Nut Co.: Boxwood, 60¢ @ 60¢ & 10¢ Ivory, 35¢ @ 35¢ & 10¢ & 10¢

Sash Balances—

See Balance, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—

See Weights, Sash.

Sausage Stuffers or Fillers

See Stuffers or Fillers, Sausage.

Saw Frames—

See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Saws—

Atkins:	
Circular	45%
Band	50@50@10
Butcher Saws	50
Cross Cuts	35
One-Man Cross Cut	40
Narrow Cross Cut	50
Hand, Hip and Panel	35@40
Miter Box and Compass	45
Mulay, Mill and Drag	45
Wood Saws	10@10
Chapin-Stephens Co.:	
Turning Saws and Frames	30@30@10
Diamond Saw & Stamping Works:	
Sterling Kitchen Saws	50@10@10
Disston's:	
Circular, Solid and Ins'ted Tooth	50
Band, 2 to 18 in. wide	60
Hand, 14 to 18	60
Crosscuts	50
Narrow, Crosscuts	45
Mulay, Mill and Drag	50
Framed Woodsaws	25
Woodsaw Blades	25
Woodsaw Rods, Tinned	15
Hand Saws, Nos. 12, 9, 9, 16, 100	10
Hand Saws, Nos. 7, 10, 10, 3, 1	25
0, 00, Combination	30
Compass, Key Hole, &c.	25
Butcher Saws and Blades	30
C. E. Jennings & Co.'s:	
Back Saws	16%
Butcher Saws	25@7%
Compass and Key Hole Saws	33@7%
Framed Wood Saws	25@7%
Hand Saws	12%
Wood Saw Blades	33@7%
Millers Falls:	
Butcher Saws	15@10
Star Saw Blades	15@10
Massachusetts Saw Works:	
Victor Kitchen Saws	40@10@50
Butcher Saws, Blades	35@40
Pease & Richardson's Hand Saws	30
Simonds':	
Circular Saws	45%
Crescent Ground Cross Cut Saws	30
One-Man Cross Cuts	40@10
Gang Mill, Mulay and Drag Saws	45
Band Saws	25@25@10
Back Saws	25@25@10
Butcher Saws	35@35@10
Hand Saws	25@25@10
Hand Saws, Bay State Brand	45
Compass, Key Hole, &c.	25@25@10
Wood Saws	45
Wheeler, Madison & Clemens	Mfg.
Co.'s Cross Cut Saws	50%
Hack Saw Blades and Frames—	
Atkins' Hack Saw Blades A & A	25%
Dunston's:	
Concave Blades	25%
Keystone Blades	35%
Hack & Frames	30%
Simonds' Co.	35%
C. E. Jennings & Co.'s:	
Hack Saw Frames, Nos. 175, 180	180
Hack Saws, Nos. 175, 180, complete	40@7%
Goodell's Hack Saw Blades	40@10
Griffin's Hack Saw Blades	35@40@10
Star Hack Saws and Blades	15@10
Sterling Hack Saw Blades	30@10@5
Sterling Hack Saw Frames	30@10@10
Sterling Power Hack Saw Machines	each, No. 1, \$25.00; No. 2, \$30.00
Victor Hack Saw Blades	20
Victor Hack Saw Frames	40%
Scroll—	
Barnes, No. 7, \$15	25%
Barnes' Scroll Saw Blades	40%
Barnes' Velocipede Power Scroll Saw	without boring attachment, \$18; with boring attachment, \$20
Lester, complete	\$10.00
Rogers, complete	\$3.50 and \$4.00
Scales—	
Family, Turnbull's	50@50@10
Counter:	
Hatch, Platform, 1/2 oz. to 5 lbs.	doz. \$5.50
Two Platforms, 1/2 oz. to 8 lbs.	doz. \$16.00
Union Platform, Plain	\$1.70@1.90
Union Platform, Stpd.	\$1.85@1.95
Chattillon's:	
Eureka	25%
Favorite	40%
Crocker's Trip Scales	50%
Chicago Scale Co.:	
The Little Detective	25 lbs 50%
Union & Platform No. 2	50
Portable Platform (reduced list)	50
Wagon or Stock (reduced list)	25@35
The Standard Portables	40%
The Standard R. R. and Wagon	50@10
Scrapers—	
Box, 1 Handle	doz. \$2.00@2.25
Box, 2 Handle	doz. \$3.50@3.80
Rip	Light, \$2.00; Heavy, \$3.50
Chapin-Stephens Co. Box	30@30@10
Richards Mfg. Co., Foot	60%
Screws—Bench and Hand	
Reich, Iron, doz. 1 in.	\$2.50@2.75
2 1/2; 1 1/2, \$3.00@3.25; 1 1/4, \$3.50@3.75	
Reich, Wood	20@20@10
Hand, Wood	70@10@70@10@10
R. Bliss Mfg. Co., Hand	20@50@20@10
Chapin-Stephens Co., Hand	70@70@10@2 1/2
Coach, Lag and Hand Rail—	
Lag, Cone Point, list Oct. 1	75@10%
Coach, Gimlet Point, list Oct. 1	75@10%
Hand Rail, list Jan. 1, '07	70@10@75%
Jack Screws—	
Standard List	70@10@75%
Millers Falls	50@10@10
Swett Iron Works	70@75%
Machine—	
List Jan. 1, '08:	
Flat or Round Head, Iron, Brass or Bronze	50@50@10%

Fillister Head, Iron, Brass or Bronze	40@10@10%
Set and Cap—	
Set (Iron)	75@10@75%
Set (Steel), net advance over Iron	25%
Sq. Hd. Cap	70@10@75%
Hec. Hd. Cap	70@10@75%
Rd. Hd. Cap	50@75%
Fillister Hd. Cap	60@75%
Wood—	
List July 23, 1905:	
Flat Head, Iron	87@45@10%
Round Head, Iron	85@45@10%
Flat Head, Brass	80@45@10%
Round Head, Brass	77@45@10%
Flat Head, Bronze	75@45@10%
Round Head, Bronze	72@45@10%
Drive Screws	87@45@10%
Scroll Saws—	
See Saws, Scroll.	
Scythes—	
Grass, No. 1, Plain	Per doz. \$6.25@6.75
Clipper, Bronzed Webb	\$6.50@7.00
No. 3 Clipper, Pol'd Webb	\$6.75@7.25
No. 6 Clipper and Solid Steel	\$7.00@7.50
Bush, Weed and Bramble, No. 2	\$6.50@7.00
Grain, No. 1	\$8.25@8.75
Bronzed Webb, No. 1	\$8.50@9.00
Nos. 3 and 4 Clipper, Grain	\$8.75@9.25
Solid Steel, No. 6	\$9.25@9.75
Seeders, Raisin—	
Enterprise	25@30%
Sets—Awl and Tool—	
Fray's Adj. Tool Handles, Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9; 5, \$7	50%
Millers Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$12; No. 5, \$18	20@10
Garden Tool Sets—	
Ft. Madison Three Flows, Hoe, Rake and Shovel	Per doz sets \$9.00
Sets, Nail—	
Octagon	Per doz. \$3.50@3.75
Ruck Bros.	27%
Cannon's Diamond Point	Per doz. \$12.40@10
Mayhew's	Per doz. \$9.90
Snell's Corrugated, Cup Pt.	40@10
Snell's Knurled Cup Pt.	40@10
Victor Knurled Cup Pt.	Per doz. \$7.50
Rivet—	
Regular list	75@75@10%
Saw—	
Atkins':	
Criterion	40%
Adjustable	40%
Disston's Star, Monarch and Triumph	30%
Morrill's No. 1	\$15.00
Nos. 3 and 4, Cross Cut	\$30.60
No. 5, Mill	\$30.00
Nos. 10, 11, 95	\$15.60
No. 1 Old Style	\$10.00
Special	\$16.25
Quint Royal Cross Cut	Per doz. \$8.00
Royal, Hand	Per doz. \$4.50
Tanator Positive	Per doz. \$6.75
Shaving—	
Fox Shaving Set, No. 30	50%
Smith & Hemenway Co.'s	75%
Sharpeners, Knife—	
Chicago Wheel & Mfg. Co.	70%
Pike Mfg. Co.:	
Fast Cut Pocket Knife Hones	Per doz. \$1.50
Mounted Kitchen Sand Stone	\$1.50
Natural Grit Carving Knife Hones	Per doz. \$3.00
Quick Cut Emery Carving Knife Hones	Per doz. \$1.50
Quick Edge Pocket Knife Hones	Per doz. \$2.50
Skate—	
Smith & Hemenway Co., Eureka	50%
Shaves, Spoke—	
Iron	doz. \$1.10@1.25
Wood	doz. \$1.75@2.25
Bailey's (Stanley R. & L. Co.)	45%
Chapin-Stephens Co.	30@30@10
Goodell's	Per doz. \$1.00
Wood's F1 and F2	50%
Shears—	
Cast Iron	7 8 9 in.
Best	\$16.00 18.00 20.00 gro.
Good	\$13.00 15.00 17.00 gro.
Cheap	\$5.00 6.00 7.00 gro.
Straight Trimmers, &c.	
Best quality Jap.	70@70@10%
Best quality Nickel	60@60@10%
Fair quality Jap.	60@60@10%
Fair quality Nickel	75@75@10%
Tailors' Shears	40@40@10%
Acme Cast Shears	40@10@5%
Heinisch's Tailor's Shears	10%
Wilkinson Shear & Cutlery Co.:	
Sheep, 1900 list	30@10@5%
Grass	50@10%
Horse or Mule	50@10%
Tinners' Snips—	
Steel Blades	20@50@20@10%
Steel Laid Blades	40@10@50%
Forged Handles, Steel Blades, Berlin	50%
Heinisch's Snips	40%
Jennings & Griffin Mfg. Co.'s 6 1/2 to 10 in.	33@45@75%
Niagara Snips	40%
P. S. & W. Forged Handles	25%
P. S. & W.	40@10%
Pruning Shears—	
Cronk's Hand Shears	33%
Cronk's Wood Handle Shears	33%
Disston's Combined Pruning Hook and Saw	Per doz. \$18.00
Disston's Pruning Hook only	Per doz. \$12.00
John T. Henry Mfg. Co.:	
Pruning Shears, all grades	40%
P. S. & W. Co.	40@10%
Columbian Cutlery Co.	
Hedge, Wilcut Brand	60@10%

Lawn and Border, Wilcut Brand	60@10%
Sheaves—Sliding Door—	
Stowell's Anti-Friction	50%
Reading	40%
R. & E. list	15%
Sliding Shutter—	
Reading list	40%
R. & E. list	10%
Shells—Shells, Empty—	
Brass Shells, Empty:	
Climax, 10 and 12 gauge	65@10%
Club, Rival, 65@5%; First Quality	60@5%
Paper Shells, Empty:	
New Rapid, 10, 12, 16 and 20 gauge	25@10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade	25@5%
Union, League, 12 and 12 gauge; Rival Grade	25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge	20@5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade	20%
Expert, 10, 12, 16 and 20 gauge	33@5%
Robin Hood, Low Brass	30@5%
Robin Hood, High Brass	30@5%
Indian, for Black Powder	25@5%
Shells, Loaded—	
Loaded with Black Powder	40%
Loaded with Smokeless Powder, medium grade	40@5%
Loaded with Smokeless Powder, high grade	40@10%
Robin Hood:	
Smokeless Robin Hood, Low Brass	40@10%
Smokeless Comets, High Brass	40@10@5%
Indian, Black Powder	40@5%
Union Metallic Cartridge Co.:	
New Club, Black Powder	40%
Nitro Club, Smokeless Powders	40@5%
Arrow, Smokeless Powders	40@10%
Winchester:	
Smokeless Repeater Grade	40@5%
Smokeless Leader Grade	40@10%
Black Powder	40%
Shingles, Metal—Per Sq.	
Edwards Mfg. Co.:	
Painted	Galv.
14 x 20	\$1.25 \$6.00
10 x 14	4.50 6.25
7 x 10	4.75 6.50
Wheeling Corrugating Co.:	
Dixie, 14 x 20 in.	\$4.25 \$5.50
Dixie, 10 x 14 in.	4.50 6.00
Dixie, 7 x 10 in.	5.00 6.75
Shoes, Horse, Mule, &c.—	
F.o.b. Pittsburgh:	
Iron	per keg \$4.10
Steel	per keg \$3.85
Burden's, all sizes	per keg \$3.90
Shot—	
Drop, up to B	25-lb. bag. \$1.95
Drop, B and larger	2.20
Buck	2.20
Chilled	2.20
Dust	2.40
Shovels and Spades—	
Association List, Nov. 15, 1902	10%
Avery Stamping Co.	30%
Snow Shovels—	
Long Handle	\$3.25@3.50
Wood and Mail, D. Handle	\$3.75@4.00
Sieves and Sifters—	
Hunter's Imitation	Per dozen \$9.50@10.00
Hunter's Genuine	per doz. \$12.00@12.50
Buffalo Metallic Sifted, R. M. Co.	per 175 \$15.00 \$15.00 \$18.00
Sieves, Seamless Metallic—	
Mesh	14 16 18 20
Iron Wire	\$1.05 1.05 1.10 1.20
Tinned Wire	\$1.15 1.15 1.20 1.30
Sieves, Wooden Rim—	
Nested, 10, 11 and 12 inch	
Mesh 18, Nested	doz. \$0.90@1.03
Mesh 20, Nested	doz. \$1.00@1.03
Mesh 24, Nested	doz. \$1.90@1.10
Sinks, Cast Iron—	
Painted, Standard list:	
12 x 12 to 22 x 36 in.	60%
20 x 40 to 24 x 50 in.	50%
24 x 60 to 24 x 120 in.	30%
Barnes' low list:	
Up to and including 20 x 36 in.	50%
20 x 40 to 24 x 50 in.	45%
NOTE—There is not entire uniformity in lists used by jobbers.	
Skins, Wagon—	
Cast Iron	70@75@10%
Steel	40@45%
Slates, School—	
Factory Shipments:	
"D" Slates	56@50@10%
Eureka, Unexcelled Noiseless	60@5 tons
Victor A. Noiseless	60@5 tons
Slaw Cutters—See Cutters.	
Snaps, Harness—	
German	40@40@10%
Covert Mfg. Co.:	
Derby, 25% Yankee, 30@22% Yankee	
High Grade, 40%; Trojan	40%
Jockey	25%
Snaths—	
Scythe	50%
Snips, Tinners—See Shears.	

Spoons and Forks—	
Silver Plated—	
Good Quality.....	50@10@60@5%
Cheap.....	60@60@10%
International Silver Co.:	
1847 Rogers Bros., 40&10%; Rogers & Hamilton.....	50&10%
Rogers & Bro., William Rogers.....	50&10%
Eagle Brand.....	50&10%
Anchor, Rogers Brand.....	60%
Wm. Rogers & Son.....	60&10%
Miscellaneous—	
German Silver.....	60@60&5%
Cattaraugus Cutlery Co.:	
Seneca Silver.....	50%
Tinned Iron—	
Teas.....	per gro. 50@50@10%
Tables.....	per gro. \$0.90@1.50
Springs—Door—	
Bardley's Spring and Check.....	40%
Chicago (Coil).....	40&10%
Gem (Coil).....	20%
Pullman (Coil).....	35%
Reliance (Coil).....	40&10%
Star (Coil).....	30%
Torrey's Rod.....	39 in. \$1.10
Carriage, Wagon, &c.—	
1 1/4 in. and Wider:	Per 100 lb.
Black.....	\$4.75@5.00
Half Bright.....	\$4.75@5.00
Bright.....	\$5.25@5.50
Painted Seat Springs:	
1 1/4 x 2 x 26.....	per pr. \$7@49c
1 1/2 x 3 x 28.....	per pr. 69@71c
Sprinklers, Lawn—	
American Foundry & Mfg. Co.:	
Cactus, 65%; Japanese, 70%; National, \$1 doz. \$12.00	
Enterprise.....	25@30%
Philadelphia No. 1, \$1 doz. \$12; No. 2, \$15; No. 3, \$20.....	30%
Squares—	
Nickel plated.....	List Jan. 5, 1900.
Steel and Iron.....	75@—
Rosewood Hdl. Try Square and T-Bevels.....	60&10@10@70%
Iron Hdl. Try Squares and T-Bevels.....	40@10@40@10@10%
Disston's Try Squares and Bevels.....	
Rosewood Handle, 60&10%; Iron Stock and Bevel.....	15%
Squeezers, Lemon	
Wood, Common, gro., No. 0, \$5.25@5.50; No. 1, \$6.25@6.50.	
Wood, Porcelain Lined—	
Cheap.....	doz. \$1.00
Good Grade.....	doz. \$1.25
Tinned Iron.....	doz. \$0.75@1.25
Iron, Porcelain Lined.....	doz. \$1.75
Staples—	
Barbed Blind.....	lb. @6@1/2
Electricians', Association list.....	80&10@10@10%
Fence Staples, Plain, \$2.25; Galvanized.....	\$2.55
Poultry Netting Staples.....	per lb. 3/4@3 1/4
Steels, Butchers—	
Dick's.....	30%
Forster Bros.....	30%
C. & A. Hoffmann's.....	30%
Steelyards—	
30@30@10%	
Stocks and Dies—	
Blacksmiths'.....	50@50@10%
Curtis Reel's Ratchet Die Stock.....	25%
Derby Screw Plates.....	25%
Green River.....	25%
Lightning Screw Plate.....	25%
Little Glar.....	25%
Hecce's New Screw Plates.....	25%
Stoners, Cherry—	
Enterprise.....	25@30%
Stones—Oil, &c.	
Chicago Wheel & Mfg. Co., 1904 list:	
Gem Oil, Double Grit.....	65%
Gem Axe, Single or Double Grit.....	65%
Gem Slips.....	65%
Gem Razor Hones.....	50%
Pike Mfg. Co., 1907 list:	
Arkansas St. No. 1, 3 to 4 in. \$2.00	
Arkansas St. No. 1, 5 1/2 to 8 in. \$3.00	
Arkansas Slips No. 1.....	\$4.00
Lily White Washita, 4 to 8 in. 60c	
Rosy Red Washita, 4 to 8 in. 60c	
Washita St., Extra, 4 to 8 in. 50c	
Washita St., No. 1, 4 to 8 in. 50c	
Washita St. No. 2, 4 to 8 in. 25c	
Lily White Slips.....	30c
Rosy Red Slips.....	30c
Washita Slips, Extra.....	30c
Washita Slips, No. 1.....	70c
Washita Slips, No. 2.....	40c
India G. Stones (entire list).....	33@4
Quickcut Emery and Corundum Oil Stone, Double Grit.....	40%
Quickcut Emery and Corundum Oil Stone, Double Grit.....	33@4
Quickcut Emery, Rubbing Bricks.....	40%
Hindostan No. 1, R. 1/2 in. 10c	
Hindostan No. 1, Small.....	10c
Axe Stones (all kinds).....	10c
Turkey Oil Stones, Extra 5 to 8 in.....	80c
Queer Creek Stones, 4 to 8 in. 20c	
Queer Creek Slips.....	40c
Sand Stone.....	6c
Scythe Stones—	
Chicago Wheel & Mfg. Co.	
Gro. \$9.00 10 in., \$8.00; 12 in., \$10.00.	
Pike Mfg. Co., 1907 list:	
Black Diamond S. 8, 30 gro. \$12.00	
Lamolle S. 8.....	\$11.00
White Mountain S. 8, 30 gro. 20.00	
Green Mountain S. 8, 30 gro. 20.00	
Extra Indian Pond S. 8, 30 gro. 17.50	
San Diego S. 8, 30 gro. 17.50	
No. 2 Indian Pond S. 8, 30 gro. 14.50	
Leader Red End S. 8, 30 gro. 14.50	
Quick Cut Emery.....	\$10.00
Pure Corundum.....	\$18.00
Present.....	\$7.00
Emery Scythe Stones, 4 Coat, \$8	
Emery Scythe Rifes, 3 Coat, \$10	
Balance of 1904 list 33 1/2%	
Electro (Artificial), \$ gro., 33 1/2%	
Lightning (Artificial), \$ gro., 33 1/2%	

Stoppers, Bottle—
Victor Bottle Stoppers..... $\frac{1}{2}$ doz. $\$9.00$
Stops—Bench—
Millers Falls..... $\frac{1}{2}$ doz. $\$15.00$
Morrill's, $\frac{1}{2}$ doz. No. 1..... $\$10.00$
Morrill's, No. 2, $\frac{1}{2}$ doz..... $\$10.00$

Door—
Chapin-Stephens Co..... $\frac{1}{2}$ doz. $\$50.00$
Plane—
Chapin-Stephens Co..... $\frac{1}{2}$ doz. $\$30.00$

Straps—Box—
Cary's Universal, case lts..... $\frac{1}{2}$ doz. $\$10.00$

Stretchers, Carpet—
Cast Iron, Steel Points, doz.
Socket..... $\frac{1}{2}$ doz. $\$10.00$
Bullard, $\frac{1}{2}$ doz..... $\$10.00$
Excelsior Stretcher and Tack Hammer Combined, $\frac{1}{2}$ doz. $\$6.00$

Woven Fence—
Franklin.....ea. $\$3.75$

Strops, Razor—
Star Diagonal Strop..... $\frac{1}{2}$ doz. $\$25.00$
Carbo Magnetic, No. V..... $\frac{1}{2}$ doz. $\$8.50$

Stuffers, Sausage—
Enterprise Mfg. Co..... $\frac{1}{2}$ doz. $\$25.00$
National Specialty Co., list Jan. 1, 1902..... $\frac{1}{2}$ doz. $\$30.00$
P. S. & W. Co..... $\frac{1}{2}$ doz. $\$10.00$

Sweepers, Carpet—
Bissell Carpet Sweeper Co.: $\frac{1}{2}$ doz.
Superba, Crotch Mahogany..... $\$36.00$
Triumph, Fancy Veneers..... $\$33.00$
Parlor Queen, Figured Rosewood..... $\$30.00$
Elite, Hungarian Ash..... $\$29.00$
American Queen, Figured Mahogany..... $\$27.00$
Ideal, Bird's-Eye Maple..... $\$25.00$
Grand Rapids, Nickel..... $\$24.00$
Japan..... $\$22.00$
Standard, Nickel..... $\$22.00$
Crown Jewel, Nickel..... $\$21.00$
Japan..... $\$19.00$
Crystal, Glass Top..... $\$19.00$
Grand, 17 in. wide..... $\$18.00$
Club, 24 in. wide..... $\$18.00$
Hall, 28 in. wide..... $\$18.00$
National Sweeper Co.: $\frac{1}{2}$ doz.
Louis XV, Roller Bearing..... $\$120.00$
Plated..... $\$120.00$
Hepplewhite, Roller Bearing, Silver Plated..... $\$120.00$
Sheraton, Roller Bearing, N'kel..... $\$60.00$
Ye Mission, Roller Bearing, Oxidized Coppered..... $\$60.00$
Transparent, Roller Bearing..... $\$60.00$
Glass Top, Nickel..... $\$60.00$
National Queen, Roller Bearing, Fancy Veneers..... $\$27.00$
Loyal, Roller Bearing, Veneers..... $\$25.00$
Nickel..... $\$25.00$
Triple Medal, Roller Bearing, Nickel..... $\$24.00$
Marion, Roller Bearing, N'kel..... $\$24.00$
Marion Queen, Roller Bearing, Nickel..... $\$24.00$
Monarch, Roller Bearing, N'kel..... $\$22.00$
Monarch, Roller Bearing, Jap..... $\$22.00$
Perpetual, Regular B'r'ga, N'kel..... $\$18.00$
Monarch Extra (17 in. case), Roller Bearing, Nickel..... $\$36.00$
Monarch Extra (17 in. case), Roller Bearing, Japanned..... $\$33.00$
Auditorium (26 in. case), Roller Bearing, Nickel..... $\$54.00$
Mammoth (30 in. case), Roller Bearing, Nickel..... $\$60.00$
Streator Metal Stamping Co.:
Eureka Japanned..... $\frac{1}{2}$ doz. $\$15.00$
Model E, Sanitaire..... $\frac{1}{2}$ doz. $\$25.00$
Model A, Sterling..... $\frac{1}{2}$ doz. $\$25.00$
Model B, Sterling, Nickel..... $\frac{1}{2}$ doz. $\$23.00$
Model B, Sterling, Japanned..... $\frac{1}{2}$ doz. $\$23.00$
Model C, Sterling..... $\frac{1}{2}$ doz. $\$21.50$
Model D, Sterling..... $\frac{1}{2}$ doz. $\$19.50$

NOTE—Rebates: 50¢ per dozen on three dozen lots; $\frac{1}{2}$ ¢ per dozen on five dozen lots; $\frac{3}{4}$ ¢ per dozen on ten dozen lots; $\frac{1}{2}$ ¢ per dozen on twenty-five dozen lots.

Tacks, Finishing Nails, &c.
American Carpet Tacks..... $\frac{1}{2}$ doz. $\$25.00$
American Cut Tacks..... $\frac{1}{2}$ doz. $\$25.00$
Swedes' Cut Tacks..... $\frac{1}{2}$ doz. $\$25.00$
Swedes' Upholsterers'..... $\frac{1}{2}$ doz. $\$25.00$
Gimp Tacks..... $\frac{1}{2}$ doz. $\$25.00$
Lace Tacks..... $\frac{1}{2}$ doz. $\$25.00$
Trimmers' Tacks..... $\frac{1}{2}$ doz. $\$25.00$
Looking Glass Tacks..... $\frac{1}{2}$ doz. $\$25.00$
Bill Posters' and Railroad Tacks..... $\frac{1}{2}$ doz. $\$25.00$
Hungarian Nails..... $\frac{1}{2}$ doz. $\$25.00$
Finishing Nails..... $\frac{1}{2}$ doz. $\$25.00$
Trunk and Clout Nails..... $\frac{1}{2}$ doz. $\$25.00$

NOTE—The above prices are for Standard Weights.

Miscellaneous—
Double Pointed Tacks..... $\frac{1}{2}$ doz. $\$25.00$
See also Nails, Wire.

Tanks, Oil and Gasoline—
R. M. Co., Oil and Gasoline, each:
Gal. Emerald Royal Underground..... $\$3.00$
Queen City Monarch..... $\$3.00$
Gal. $\$4.25$ $\$4.00$ $\$3.00$

Wilson & Friend Co.:
Gal. Gasoline..... $\$0.11$
Gal. $\$2.75$ $\$2.50$ $\$1.00$
Gal. $\$3.50$ $\$3.00$ $\$1.50$
Gal. $\$4.25$ $\$3.50$ $\$1.75$

Tapes, Measuring—
American Asses' Skin..... $\frac{1}{2}$ doz. $\$50.00$
Patent Leather..... $\frac{1}{2}$ doz. $\$50.00$
Steel..... $\frac{1}{2}$ doz. $\$31.34$
Chesterman's..... $\frac{1}{2}$ doz. $\$25.00$
Keuffel & Esser Co.:
Favorite, Ass Skin..... $\frac{1}{2}$ doz. $\$40.00$
Favorite, Duck and Leather..... $\frac{1}{2}$ doz. $\$25.00$
Metallic and Steel, lower lat. $\frac{1}{2}$ doz. $\$35.00$
Pocket..... $\frac{1}{2}$ doz. $\$35.00$

Lufkin's:
Asses' Skin..... $\frac{1}{2}$ doz. $\$40.00$
Metallic..... $\frac{1}{2}$ doz. $\$30.00$
Patent Bend, Leather..... $\frac{1}{2}$ doz. $\$25.00$
Pocket..... $\frac{1}{2}$ doz. $\$25.00$
Steel..... $\frac{1}{2}$ doz. $\$35.00$
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L..... $\frac{1}{2}$ doz. $\$25.00$
Chesterman's Steel, No. 1038L..... $\frac{1}{2}$ doz. $\$35.00$

Teeth, Harrow—
Steel Harrow Teeth, plain or headed, $\frac{1}{2}$ -inch and larger..... $\frac{1}{2}$ doz. $\$2.75$ to $\$3.00$

Thermometers—
Tin Case..... $\frac{1}{2}$ doz. $\$8.00$ to $\$10.00$

Ties, Bale—Steel Wire—
Single Loop..... $\frac{1}{2}$ doz. $\$8.00$ to $\$10.00$
Monitor, Cross Head, &c. $\frac{1}{2}$ doz. $\$2.75$

Brick Ties—
Niagara Brick Ties..... $\frac{1}{2}$ doz. $\$2.50$

Tinners' Shears, &c.—
See Shears, Tinners', &c.

Tinware—
Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.
See Benders and Upsetters, Tire.

Tools—Coopers—
L. & I. J. White..... $\frac{1}{2}$ doz. $\$20.00$ to $\$25.00$

Haying—
Myers' Hay Tools..... $\frac{1}{2}$ doz. $\$45.00$
Stowell's Hay Carriers, 45%; Hay Forks, 45%; Fork Pulleys, 45%.

Miniature—
Smith & Hemenway Co.'s, Davidson, $\frac{1}{2}$ doz., Nickel Plated, $\$1.50$
Gold Plated..... $\$2.00$

Saw—
Atkins' Cross Cut Saw Tools..... $\frac{1}{2}$ doz. $\$35.00$
Simonds' Improved..... $\frac{1}{2}$ doz. $\$35.00$
Simonds' Crescent..... $\frac{1}{2}$ doz. $\$35.00$

Ship—
L. & I. J. White..... $\frac{1}{2}$ doz. $\$25.00$

Transom Lifters—
See Lifters, Transom.

Traps—Fly—
Balloon, Globe or Acme, doz. $\$1.15$ to $\$1.25$; gro. $\$11.50$ to $\$12.00$
Harper, Champion or Paragon, doz. $\$1.25$ to $\$1.40$; gro. $\$13.00$ to $\$13.50$

Game—
Imitation Onida..... $\frac{1}{2}$ doz. $\$70.00$
Newhouse..... $\frac{1}{2}$ doz. $\$45.00$
Hawley & Norton..... $\frac{1}{2}$ doz. $\$65.00$
Victor..... $\frac{1}{2}$ doz. $\$70.00$
Onida Community Jump..... $\frac{1}{2}$ doz. $\$50.00$

Mouse and Rat—
Mouse, Wood, Choker, doz. holes $\frac{1}{2}$ doz. $\$12.00$
Mouse, Round or Square Wire, doz. $\$85.00$

Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, $\frac{1}{2}$ doz., $\$13.25$; case of 24..... $\$11.50$ doz.
No. 3, Rat, $\frac{1}{2}$ doz., $\$6.50$; case of 50..... $\$5.75$ doz.
No. 3½, Rat, $\frac{1}{2}$ doz., $\$5.25$; case of 72..... $\$4.70$ doz.
No. 4, Mouse, $\frac{1}{2}$ doz., $\$3.85$; case of 150..... $\$3.00$ doz.
No. 5, Mouse, $\frac{1}{2}$ doz., $\$3.00$; case of 150..... $\$2.25$ doz.

Trimmers, Spoke—
Wood's E I..... $\frac{1}{2}$ doz. $\$50.00$

Trowels—
Disston Brick and Pointing..... $\frac{1}{2}$ doz. $\$25.00$
Disston Plastering..... $\frac{1}{2}$ doz. $\$20.00$
Disston Standard Brand and Garden Trowels..... $\frac{1}{2}$ doz. $\$30.00$
Kohler's Steel Garden Trowels, $\frac{1}{2}$ doz., 5 in., $\$4.80$; 6 in., $\$6.00$
Never-Break Steel Garden Trowels..... $\frac{1}{2}$ doz. $\$30.00$

Trucks, Warehouse, &c.—
B. & L. Block Co.:
New York Pattern..... $\frac{1}{2}$ doz. $\$50.00$
Western Pattern..... $\frac{1}{2}$ doz. $\$60.00$
Handy Trucks..... $\frac{1}{2}$ doz. $\$18.00$
Grocery Standard Brand and Garden Trowels..... $\frac{1}{2}$ doz. $\$15.00$
Daisy Store Trucks, Improved Pattern..... $\frac{1}{2}$ doz. $\$22.50$
McKinney Trucks.....each, net $\$10.00$
Model Store Trucks..... $\frac{1}{2}$ doz. $\$18.50$

Tubs, Wash—
M'f'r's list, price per gross.
No. 0 1 2 3
Galvanized, $\$67$ $\$79$ $\$89$ $\$99$ 10%
Galvanized Wash Tubs (I. M. Co.):
No. 10 20 30
Per gro. $\$61.00$ $\$76.00$ $\$86.00$ $\$90.00$
No. 10 20 30
Per gro. $\$58.00$ $\$70.00$ $\$80.00$ $\$83.00$

Twine, Miscellaneous—
Flax Twine:
No. 8, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls, $\frac{1}{2}$ doz. $\$25.00$
No. 12, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls, $\frac{1}{2}$ doz. $\$22.00$
No. 18, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls, $\frac{1}{2}$ doz. $\$18.00$
No. 24, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls, $\frac{1}{2}$ doz. $\$14.00$
No. 36, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls, $\frac{1}{2}$ doz. $\$10.00$
Chalk Line, Cotton..... $\frac{1}{2}$ doz. $\$25.00$
Cotton Mops, 6, 9, 12 and 15 lb. to doz..... $\$11.00$ to $\$19.00$
Cotton Wrapping, 3 Balls to lb., according to quality..... $\frac{1}{2}$ doz. $\$15.00$ to $\$23.00$
American 2-Ply Hemp, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls..... $\frac{1}{2}$ doz. $\$14.00$ to $\$15.00$
American 3-Ply Hemp, 1-lb. Balls..... $\frac{1}{2}$ doz. $\$15.00$ to $\$16.00$
India 2-Ply Hemp, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls (Spring Twine)..... $\frac{1}{2}$ doz. $\$11.00$ to $\$12.00$
India 3-Ply Hemp, 1-lb. Balls..... $\frac{1}{2}$ doz. $\$11.00$ to $\$12.00$
India 3-Ply Hemp, $\frac{1}{4}$ -lb. Balls..... $\frac{1}{2}$ doz. $\$10.00$ to $\$11.00$
2, 3, 4 and 5-Ply Jute, 1-lb. Balls..... $\frac{1}{2}$ doz. $\$13.00$ to $\$14.00$
Mason Line, Linen, $\frac{1}{2}$ -lb. Balls..... $\frac{1}{2}$ doz. $\$13.00$ to $\$14.00$

No. 26½ Mattress, $\frac{1}{4}$ and $\frac{1}{2}$ -lb. Balls, according to quality, $\frac{1}{2}$ doz. $\$30.00$ to $\$60.00$
Wool, 3 to 6 ply.....B 2¢; A 10¢

Vises—
Solid Box..... $\frac{1}{2}$ doz. $\$50.00$ to $\$100.00$

Parallel—
Athal Machine Co.:
Simpson's Adjustable..... $\frac{1}{2}$ doz. $\$40.00$
Standard..... $\frac{1}{2}$ doz. $\$40.00$
Amateur..... $\frac{1}{2}$ doz. $\$40.00$
Columbian Hdw. Co..... $\frac{1}{2}$ doz. $\$40.00$
Emmert Universal:
Pattern Makers' No. 1, $\frac{1}{2}$ doz. $\$15.00$; No. 2, $\frac{1}{2}$ doz. $\$12.50$
Machine and Tool Makers' No. 1A, $\frac{1}{2}$ doz. $\$12.50$; No. 6A, $\frac{1}{2}$ doz. $\$10.00$; No. 10A, $\frac{1}{2}$ doz. $\$12.50$
Tiger Machinists..... $\frac{1}{2}$ doz. $\$50.00$
Fisher & Norris Double Screw, net, each, Nos. 2, $\$10.50$; 3, $\$16.00$; 4, $\$20.50$; 5, $\$27.00$
Fulton Mach. & Vise Co.:
Reed, Swivel..... $\frac{1}{2}$ doz. $\$25.00$
Star, Solid Jaw..... $\frac{1}{2}$ doz. $\$40.00$
Hollands':
Machinists'..... $\frac{1}{2}$ doz. $\$100.00$ to $\$150.00$
Keystone..... $\frac{1}{2}$ doz. $\$50.00$ to $\$100.00$
Lewis Tool Co.:
Adjustable Jaw..... $\frac{1}{2}$ doz. $\$30.00$
Monarch, 50%; Solid Jaw..... $\frac{1}{2}$ doz. $\$50.00$
Massey Vise Co.:
Climber..... $\frac{1}{2}$ doz. $\$40.00$
Perfect, 15%; Lightning Grip..... $\frac{1}{2}$ doz. $\$15.00$
Merrill's..... $\frac{1}{2}$ doz. $\$20.00$
M'f'r's Falls Oval Slide Pattern..... $\frac{1}{2}$ doz. $\$10.00$
Parier's:
Victor, $\frac{1}{2}$ doz. $\$20.00$; Regulars..... $\frac{1}{2}$ doz. $\$20.00$
Vulcan..... $\frac{1}{2}$ doz. $\$20.00$
Combination Pipe..... $\frac{1}{2}$ doz. $\$55.00$
Prentiss..... $\frac{1}{2}$ doz. $\$20.00$
Snediker's X. L..... $\frac{1}{2}$ doz. $\$33.00$
Stephens'..... $\frac{1}{2}$ doz. $\$33.00$

Saw Filers—
Disston's D 3 Claw and Guide, $\frac{1}{2}$ doz. $\$24.00$, 30%; Clamps..... $\frac{1}{2}$ doz. $\$24.00$, 30%;
Perfection Saw Clamps, $\frac{1}{2}$ doz. $\$40.00$
Reading..... $\frac{1}{2}$ doz. $\$60.00$

Wood Workers—
Fulton Mach. & Vise Co.:
Reed..... $\frac{1}{2}$ doz. $\$25.00$
Star..... $\frac{1}{2}$ doz. $\$40.00$
Massey Vise Co.:
Lightning Grip, 15%; Perfect..... $\frac{1}{2}$ doz. $\$15.00$
Wanam & Gordon's Quick Action, 6 in., $\$6.00$; 9 in., $\$7.00$; 14 in., $\$8.00$

Miscellaneous—
Holland's Combination Pipe..... $\frac{1}{2}$ doz. $\$60.00$ to $\$100.00$
Massey's Quick Action Pipe..... $\frac{1}{2}$ doz. $\$40.00$
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60.5%; No. 87, 40%.

Wads—Price per M.
B. E., 11 up..... $\frac{1}{2}$ doz. $\$60.00$
B. E., 9 and 10..... $\frac{1}{2}$ doz. $\$70.00$
B. E., 8..... $\frac{1}{2}$ doz. $\$80.00$
B. E., 7..... $\frac{1}{2}$ doz. $\$80.00$
P. E., 11 up..... $\frac{1}{2}$ doz. $\$1.00$
P. E., 9 and 10..... $\frac{1}{2}$ doz. $\$1.25$
P. E., 8..... $\frac{1}{2}$ doz. $\$1.50$
P. E., 7..... $\frac{1}{2}$ doz. $\$1.50$
Ely's B. E., 11 and larger..... $\frac{1}{2}$ doz. $\$1.70$ to $\$1.75$
Ely's P. E., 12 to 20..... $\frac{1}{2}$ doz. $\$3.00$ to $\$3.25$

Ware, Hollow—
Cast Iron, Hollow—
Stove Hollow Ware:
Enameled..... $\frac{1}{2}$ doz. $\$45.00$
Ground..... $\frac{1}{2}$ doz. $\$50.00$
Plain or Unground..... $\frac{1}{2}$ doz. $\$60.00$
Country Hollow Ware, per 100 lbs..... $\$3.00$

White Enameled Ware—
Maslin Kettles..... $\frac{1}{2}$ doz. $\$65.00$ to $\$100.00$
Corred Wares:
Tinned and Turned..... $\frac{1}{2}$ doz. $\$35.00$ to $\$50.00$
Enameled..... $\frac{1}{2}$ doz. $\$45.00$ to $\$60.00$
See also Pots, Gluc.

Enameled—
Agate Nickel Steel Ware..... $\frac{1}{2}$ doz. $\$33.00$
Iron clad Ware..... $\frac{1}{2}$ doz. $\$70.00$
Lava and Volcanic, Enameled..... $\frac{1}{2}$ doz. $\$40.00$

Tea Kettles—
Galvanized Tea Kettles:
Inch..... $\frac{1}{2}$ doz. $\$5.00$ to $\$9.00$
Each..... $\frac{1}{2}$ doz. $\$5.00$ to $\$9.00$

Steel Hollow Ware—
Avery Spiders and Griddles..... $\frac{1}{2}$ doz. $\$65.00$ to $\$100.00$
Avery Kettles..... $\frac{1}{2}$ doz. $\$60.00$
Porcelain..... $\frac{1}{2}$ doz. $\$50.00$ to $\$100.00$
Never Break Spiders and Griddles..... $\frac{1}{2}$ doz. $\$65.00$ to $\$100.00$

Never Break Kettles..... $\frac{1}{2}$ doz. $\$65.00$ to $\$100.00$
Solid Steel Spiders and Griddles..... $\frac{1}{2}$ doz. $\$65.00$ to $\$100.00$
Solid Steel Kettles..... $\frac{1}{2}$ doz. $\$60.00$

Warmers, Foot—
Pike Mfg. Co., Soapstone..... $\frac{1}{2}$ doz. $\$40.00$ to $\$100.00$

Washboards—
Solid Zinc:
Crescent, family size, bent frame..... $\frac{1}{2}$ doz. $\$4.05$
Iked Star, family size, stationary protector..... $\frac{1}{2}$ doz. $\$4.05$
Double Zinc Surface:
Saginaw Globe, family size, etc..... $\frac{1}{2}$ doz. $\$3.55$
any protector..... $\frac{1}{2}$ doz. $\$3.55$
Cable Cross, family size, stationary protector..... $\frac{1}{2}$ doz. $\$3.60$
Single Zinc Surface:
Naiaid, family size, open back, perforated..... $\frac{1}{2}$ doz. $\$3.00$
Single Saginaw Globe..... $\frac{1}{2}$ doz. $\$2.85$

Brass Surface—
Brass King, Single Surface, open back..... $\frac{1}{2}$ doz. $\$1.05$
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface..... $\frac{1}{2}$ doz. $\$3.60$
Glass Surface:
Glass King, Single Surface, open back..... $\frac{1}{2}$ doz. $\$3.95$
Enamel Surface:
Enamel King, Single Surface, ventilated back..... $\frac{1}{2}$ doz. $\$3.95$

Washers—Leather, Axle—
Solid..... $\frac{1}{2}$ doz. $\$80.00$ to $\$100.00$
Patent..... $\frac{1}{2}$ doz. $\$90.00$ to $\$100.00$
Coll: $\frac{1}{2}$ doz. $\$10.00$ to $\$15.00$
 $\frac{1}{2}$ doz. $\$10.00$ to $\$15.00$
 $\frac{1}{2}$ doz. $\$10.00$ to $\$15.00$
 $\frac{1}{2}$ doz. $\$10.00$ to $\$15.00$

Iron or Steel—
Size bolt.....5-16 $\frac{1}{2}$ 3/4 1 1 1/2 2 3/4 3 4
Washers..... $\frac{1}{2}$ 3/4 1 1 1/2 2 3/4 3 4
The above prices are based on $\$5.50$ off list.
In lots less than one keg add $\frac{1}{4}$ ¢ per lb.; 5-lb. boxes add $\frac{1}{4}$ ¢ to list.

Cast Washers—
Over $\frac{1}{2}$ inch, barrel lots, per lb. $\frac{1}{4}$ ¢ to $\frac{1}{2}$ ¢

Weather Strip—
Flexible Felt—
Lined, per 100 ft. $\$2.50$; $\frac{1}{2}$ in., $\$4.00$ to $\$10.00$
Moore's Unlined, per 100 ft. $\$2.50$; $\frac{1}{2}$ in., $\$4.00$ to $\$10.00$

Wedges—
Oil Finish..... $\frac{1}{2}$ doz. $\$3.00$

Weights—Hitching—
Covert Mfg. Co..... $\frac{1}{2}$ doz. $\$30.00$

